THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

DECEMBER, 1890.

THE PRODUCTION OF IMMUNITY WITH THE CHEMICAL SUBSTANCES FORMED DURING THE GROWTH OF THE BACILLUS OF HOG-CHOLERA; OR SWINE PLAGUE.

BY E. A. V. SCHWEINITZ, PH.D., CHEMICAL LABORATORY, BUREAU OF ANIMAL INDUSTRY, DEPARTMENT OF AGRICULTURE, WASHINGTON, D.C.

As a continuation of the preliminary paper on the ptomaïnes from the Hog-cholera germ, presented by us to the Chemical Section of the American Association for the Advancement of Science, in August last, and published in *The Medical News*, September 6th, 1890, we present now a somewhat detailed account of the successful experiments in the production of immunity in guinea-pigs which have been made up to date. The work from this standpoint again is, of course, a practical continuation of the experiments of Drs. Salmon and Smith, made upon pigeons in 1887, in which sterilized culture-media were used for preventive inoculation. We refer further to the bulletin of the Bureau on "Hog-cholera," published in 1889, in which are recorded a number of experiments upon hogs, sterilized culture-media being used for the purpose of producing immunity.

This work of Drs. Salmon and Smith was the pioneer work in preventive inoculation with other than some form of the germ of the disease itself, and the work now recorded was of course under the advice and direction of Dr. Salmon as head of the Bureau of Animal Industry. Without the careful bacteriological study of Hog-cholera which has been made by the Bureau of Animal Industry, our work would have been impossible. For our laboratory experiments guinea-pigs were used, as being convenient to handle

and susceptible to Hog-cholera. They have proved very satisfactory. The material used for inoculation was prepared in the chemical laboratory by modifications of methods already described, and by other methods which will be explained in more detail at some future date. The testing of the materials used, to determine that they were free from germs, and the greater part of the preventive inoculations, were made by Dr. Moore, with such quantities of substance and at such times as we thought best. The autopsies were also made by Dr. Moore, and the work thereby greatly facilitated.

As to the name which should be given to the ptomaïnes and albumins from the Hog-cholera culture-liquids, until their chemical constitution is more thoroughly studied, it would seem best, as there are several distinct swine-diseases, to call the ptomaïnes from the Hog-cholera germs, as a class, *sucholotoxins*, and the ptomaïne which appears to be the principal factor *sucholotoxin* (from the Greek Σûς , a hog, Χολέρα, cholera, from Χολή, bile, and *toxikon*, poison). *Sucholo-albumin* would seem to be sufficiently distinctive for the albumin of these culture liquids. As Hankin* shows, the name *toxalbumin* is hardly the correct one to apply to these substances. We shall, therefore, refer to the ptomaïnes and albumin by the names given above.

The first of our experiments that we will record were made with sucholotoxin.

Experiments I.—Two guinea-pigs, each weighing about three-fourths of a pound, were treated with a solution of about 0·05 gramme of sucholotoxin each. The solution was introduced under the skin of the inner side of the left thigh. Immediately after the operation the animal appeared uncomfortable, but was not made ill. For a few days there was a rise in temperature, and also a slight swelling at the point of inoculation, which, however, disappeared in about five days, and the animal was then well.

Two more guinea-pigs were now selected as checks, approximately of the same size and weight as those which had been treated, and the four animals were then inoculated with 0·1 c.c. of Hog-cholera virus each (0·1 c.c. beef-infusion and peptone culture one day old, plus 0·2 of sterile, normal salt solution). This is the dose which previous experiments made in the Bureau had shown to be the proper quantity to kill a guinea-pig in from eight to ten days. The inoculations with the virus were also made subcutaneously in the thigh. The checks died in eight or nine days. *Post-mortem* examination showed a large swelling at the point of inoculation, infiltration of a purulent, greyish substance

* *British Medical Journal*, 1889, p. 810.

into the connective tissue, and Necrosis of the superficial layer of the muscles of the thigh. Enlargement and reddening of inguinal glands. Peyer's patches enlarged and pigmented; liver pale and covered with a number of necrotic foci; spleen very much enlarged, dark-coloured, and friable. Cover-glass preparations from the spleen and liver showed Hog-cholera germs. This was the characteristic appearance of all the check guinea-pigs upon *post-mortem* examination, and it will not be necessary to repeat these details.

Of the animals which had been first treated with the substance mentioned, and afterwards inoculated, one died two days after the last check. Autopsy revealed the following: At the point of inoculation in the left thigh the subcutaneous tissue was infiltrated with a greyish-white substance, and the superficial layer of muscles over the inner side of thigh, and four square centimetres of the abdominal wall were necrosed. Liver pale. Spleen much enlarged, dark-coloured, and friable. Cover-glass preparations from the spleen showed a large number of Hog-cholera germs. Both ventricular walls of the heart were light-greyish and very brittle (necrosed). The other guinea-pig of this set was quite ill for ten days, with a large swelling at the point of inoculation. This finally opened and healed, and the animal was quite well within three weeks after the inoculation, and has continued so to date—five months.

Experiments II.—The next series of experiments were made with sucholo-albumin from beef-infusion and peptone culture-media.

Two guinea-pigs were again selected and treated with about 0·008 gramme each of sucholo-albumin. There was a slight rise of temperature in the animals, and the formation of a small, hard lump at the point of injection. This disappeared by the eighth day, and the animals were quite well. Two more guinea-pigs were now taken as checks, and all four animals inoculated with 0·10 c.c. of Hog-cholera culture. The checks died within seven days. The *post-mortem* appearances were practically the same as those noted in the first series. The two guinea-pigs which had been treated with the sucholo-albumin died *ten* days after the checks. This indicates considerable resistance to the disease. Autopsy showed, at the point of injection with the albumin, the subcutaneous tissue thick and reddened. The animals were considerably emaciated. At the point of inoculation a cyst, the size of a walnut, and composed of a greyish, purulent substance, was also found. The muscular wall surrounding this was sprinkled with punctiform hæmorrhages. Peyer's patches swollen and pigmented; mucous membrane of small intestine covered with a dry, yellowish, firm

layer of mucus; stomach contained a considerable quantity of liquid; liver pale, and showed fatty degeneration; spleen slightly enlarged and dark. Cover-glass preparations showed no germs, but a culture made from the spleen showed Hog-cholera germs. Beneath the peritoneum, in the region of the spinal column, and in the mesentery was a considerable number of small greyish tubercles. Several other experiments were made by treating guinea-pigs with the albumin in varying quantities, all showing resistance, and subsequently immunity.

Experiments III.—Three guinea-pigs were treated with sucholo-albumin, 0·1 gramme being given to each, subcutaneously in the thigh. The albumin for two of the animals was derived from cultures containing blood-serum; the albumose given to the third was from ordinary beef-infusion peptone culture. Ugly ulcers formed at the point of inoculation, which healed, however, in from ten to fourteen days, and the animals, with the exception of a slight rise of temperature, were well.

Two checks were again selected, and the five animals were inoculated with 0·1 c.c Hog-cholera virus. The checks died respectively in eight and ten days from Hog-cholera. The animals which had received the preventive treatment were slightly ill for a few days with swelling at the point of inoculation, which finally opened and then healed nicely, and within a week the guinea-pigs were well.

Three weeks after the inoculation, one of these animals was chloroformed and examined *post-mortem*. Not the slightest scar could be discovered, all the organs appeared perfectly normal, and no germs were found.

Experiments IV.—Four guinea-pigs were treated—two with a mixture of sucholotoxins; two with sucholotoxin and albumin. The injections were made as before, subcutaneously in the thighs, and at intervals extending over a period of four weeks. The sore caused by each injection was allowed to heal before the next one was made. After the animals had recovered from the last treatment two checks were selected, and the six were each inoculated with one-tenth c.c. Hog-cholera virus. The checks died, one in eight and the other in ten days, the *post-mortem* examination showing characteristic Hog-cholera lesions. The animals having the preventive treatment were ill for about four days, those that received only the sucholotoxins being more dull than the others. There was also slight swelling at the point of inoculation with the germ, which subsided in ten days, after which the animals were perfectly well, and have remained so—four months.

Experiments V.—Six guinea-pigs were inoculated for this

experiment, two with solution of the sucholotoxin and four with a solution of the mixed sucholotoxins. The sucholotoxin solution produced only slight local lesions, while the mixed toxins caused ulceration at the point of injection, which did not heal for two weeks. The treatment in this case again extended over a period from three to four weeks. The animals having by this time recovered, the test-experiment with Hog-cholera virus was tried. Four of the animals mentioned above were taken—two from each set—and also two checks, and the six were inoculated. The checks died in eight and nine days, the autopsies showing the characteristic conditions of death from Hog-cholera. Those that had the preventive treatment were ill and dull for from four to six days after the inoculation. At the point of inoculation there was also some swelling and infiltration, very slight, however, compared with the similar swelling on the checks. In the treated animals, the swelling sloughed and healed, and within ten days after the inoculation they were perfectly well. To test the resistance of the animals that had been treated by this method, to ordinary exposure the following experiments were conducted.

Experiments VI.—Two guinea-pigs that had received the preventive treatment, two blanks—*i.e.*, animals that had received no treatment—and two check animals that were inoculated with Hog-cholera virus were placed in one large cage. The checks became ill, and died in eight or nine days from Hog-cholera. During this time the cage was cleaned only three times, so as to give full and free opportunity for contagion. One week after the checks had died one of the blanks became ill, and died within ten days. The autopsy showed Hog-cholera lesions. The second blank became ill a few days after the first blank succumbed, and died within thirty days. The animals which had the preventive treatment are now and have been quite well, though continually exposed for five weeks to every opportunity for contagion.

Experiments VII.—These experiments are a step in advance of those already recorded, and although not quite so conclusive, indicate that the proper methods have been adopted.

A pure chemical compound prepared synthetically in the laboratory, was used for treating the guinea-pigs. Three animals were taken, and this compound was administered to them by the method already used. There was a slight rise in temperature of the animals, and swelling and soreness at the point of injection. After this had healed these animals and two checks were inoculated with one-tenth c.c. of Hog-cholera culture. The checks died in eight and nine days. The animals which had been previously treated became ill, two dying five and six days after the checks. The third entirely recovered.

Post-mortem examination of the two that died showed the following: At the point of inoculation the skin had sloughed away over an area of 1 sq. cm. The superficial muscular layer was necrosed over an area of about 3 sq. cm. and to a depth of 1 mm.; lymphatics in the fold of the knee much enlarged; Peyer's patches enlarged and pigmented; spleen *very slightly enlarged and not discoloured;* kidneys reddened; lungs normal. Cover-glass preparation from the spleen showed a few Hog-cholera germs. On both sides of the spinal column were several greyish tubercles, from $\frac{1}{4}$ to 2 mm. in diameter, lying just beneath the peritoneum. This material is being more fully tested, and experiments which promise to be successful are also being made upon hogs. Autopsies made from the animals of Experiments VI., three or four weeks after their recovery, showed that the parts were perfectly normal, not even a scar being left upon the skin, and the immunity produced was therefore *perfect.*

It is important to add that in all the experiments great care was taken that the solutions used were free from germs, cultures always being made. In cases in which the albumin is used this is particularly important. A single precipitation with absolute alcohol does not suffice to destroy the germs, and it is necessary to free the solution from germs by means of a Pasteur filter, or in some other suitable way. Therefore experiments made with material which has not been tested for germs are practically of no value. As to the poisonous character of the ptomaïnes, a single large dose is sufficient to kill a guinea-pig in from one hour to two days. The autopsy of a case of this kind is as follows: Liver pale and fatty; subcutaneous tissue over abdomen necrosed and infiltrated; muscle soft and friable. Other organs apparently normal.

The experiments here recorded show:

1. That in guinea-pigs *complete immunity* from Hog-cholera can be produced by *chemical inoculation.*

2. The sucholotoxins and sucholo-albumin are equally effective in this respect, and a mixture of these two products gives greater immunity than either used by itself. The effect of the albumin in producing immunity from Anthrax has already been pointed out by Hankin, his experiments being very successful.

3. The sucholotoxins given in large doses produce death. To produce immunity they should be administered in small quantities at a time and at frequent intervals, the system being in this way accustomed to the poison and enabled to resist it.

Further study in this interesting line of work is in progress.

The tabulated results of the foregoing experiments are appended.

TABULATED RESULTS OF EXPERIMENTS IN PRODUCING IMMUNITY FROM HOG-CHOLERA IN GUINEA-PIGS.

No. of experiment.	Material used for treatment.	Hog-cholera virus used for each animal.	No. of animals used.	No. of checks.	Number of days between Inoculation with virus and death of checks.	Result in treated animals.
I.	Sucholotoxin .	c.10 c.c.	2	2	8 and 9	1 died in 11 days; 1 recovered.
II.	Sucholo-albumin	do.	2	2	7	Died in 17 days; great resistance.
III.	Sucholo-albumin	do.	3	2	8 and 10	Recovered immunity.
IV.	1. Sucholotoxins .	do.	2			Recovered immunity.
	2. Sucholotoxin and albumin . .	do.	2	2	8 and 10	
V.	1. Sucholotoxin .	do.	2			
	2. Sucholotoxins .	do.	2	2	8 and 9	Recovered immunity.
VI.	Sucholotoxins .	do.	2	2 blanks, 2 checks	8 and 9	Blanks died in 18 and 30 days. Others not affected; immunity.
VII.	Pure chemical .	do.	3	2	8 and 9	Two died in 13 and 14 days. Third recovered immunity.

ANIMAL (CALF) VACCINATION.

BY C. RUTHERFORD, A.V.D., F.R.C.V.S., ALDERSHOT.

THE following rough notes have been put together in the hope that they may be of use to some of the readers of the VETERINARY JOURNAL, especially those interested in the subject in India, South Africa, and other countries.

The animals used for the purpose at the Army Vaccine Institute are calves only.

The buildings necessary for the collection and storage of vaccine consist of a laboratory, an operating-room, and a calf-house, all of which, for convenience, are on one floor, each separated from the other by walls from floor to ceiling, and, for sanitary reasons, cemented. They are well lighted by large windows, and hot water is readily obtainable. In hot countries the buildings might be thick-walled, double-roofed, provided with verandahs, and capable of being darkened to some extent, so as to lessen the curse of flies. In cold weather it is advisable to keep the temperature of the building at about 60° F., so long as calves

are in it; and to maintain an even temperature in winter a boiler-house is required, attached to or underneath the building, in which is a stove capable of generating the heat required to traverse the building by means of pipes. For the storage of lymph or vaccine a vault is employed, so made to exclude heat and light, and of course in a most sanitary state. During warm weather ice is used to keep the lymph cool.

The laboratory is a room in which vaccine is prepared for issue or storage. It is provided with a door which leads to the operating-room, and another to the outside air; a long, heavily-built table, on one portion of which is a fixture meant to receive the agate mortar in which the vaccine is reduced to a pulp; a cupboard fitted with shelves for the reception of instruments and apparatus; and also the necessary washstand, chairs, etc.

The operating-room is well lit at that end where the work is carried on, and provided with a large, specially-made operating-table—a small, portable table, on which instruments and apparatus are placed during the vaccination of and removal of vaccine from the calf, with water-taps and other minor necessities.

The calf-house is simply a stable where the calves are kept, tied up in stalls so narrow that they have no room to spare, and yet sufficient to permit them to lie down comfortably. The number of stalls will vary according to the amount of vaccine required from the establishment. Doors lead to the outside air and to the other compartments.

The calves are hired at a certain rate, delivered and removed by the owner, fed by the establishment, and kept at the hirer's risk. They must be healthy, strong, and in good condition; and from four to six months old is a good age. They should be carried from the owner's premises to the Institute so as to lessen the risk of being bruised or injured if driven on foot.

Each calf requires to be under supervision for a few days prior to vaccination; its temperature is taken daily and recorded, and anything unusual noted. If found healthy, so far as one can judge, it is then vaccinated; the vaccine reproduced is in time taken from it; the calf kept two or three days subsequently, and then returned to owner. It is generally admitted that vaccine should only be issued for use if it be perfectly free from any possible source of disease; but the question arises, "May not a calf be a tuberculous subject without showing any manifestations of that disease during the short time it is under observation?" One must admit that, to guard against any such source of infection of the human subject, the safest system by far would be to buy the calves, operate, and then slaughter. Examination of the carcase would reveal the presence of Tuberculosis, etc., or otherwise

and lymph which had been obtained from a tuberculous subject could then be destroyed, so that the risk of vaccinating human beings with contaminated vaccine would be *nil.*

The feeding of the calves during the whole period must be good and succulent; and their bedding (straw or sawdust) should be thick, so as to keep them as clean as possible.

A register of the calves is kept, in which are detailed their consecutive numbers, colour, sex, age, condition, dates of admission and vaccination, their daily temperature, and any other notes thought necessary; also a record detailing the vaccination, amount of vaccine collected from each calf, and its issue to different stations. Amongst other books a record of the results of vaccination of human beings is also kept, the details being furnished by the medical officers to whom lymph is issued.

Process of Vaccination.—The calf is fixed on the table in the operating-room, and the hair shaved off the abdomen, the inner face of both thighs, and the scrotum if a bull calf, which places are afterwards washed with luke-warm water and dried. The portable tabie mentioned is fixed up close to the operating-table, and a glass slab, containing a quantity of "vaccine pulp" or "crusts in glycerine," is placed upon it. One scarification after another, each in the form of a square, and of the size of a shilling, is made on the skin of the shaven parts—drawing of blood is to be avoided—and as each square is made, some of the "pulp" or "crusts in glycerine" is thoroughly rubbed in with the aid of the flat side of the scarifying knife and allowed to remain. Thirty to forty squares may be placed on one calf.

The calf is now released and led to its stall, a cradle put on, its tail tied by string to the cradle, it is labelled with a number corresponding to its number in the register and in the record, and left there. If the tail be left loose, or the cradle not put on, the animal is apt to rub and irritate the vaccinated spots and cause erythema. The stall must be kept scrupulously clean, to avoid as much as possible, dirt sticking to and fouling the thighs and abdomen; but if any of the squares be fouled, they should be left dry, not washed. The temperature of the calf is still taken daily and recorded.

For three days nothing of any importance is to be noticed beyond the temperature of the calf being a shade higher than normal; but on the fourth day it has risen about three degrees Fahr. The calf is still bright and feeding well, though perhaps a little stiff.

On the fourth day, locally a red areola is to be found around each square, which is now a papule of large size and with a flat top.

On the fifth day, or 120 hours after vaccination, the characteristic Cow-pox vesicle on an enlarged scale is to be seen, surrounded by a red flush, and margined by a silvery ring about a sixteenth of an inch thick, which encloses a raised, somewhat dark, scab-like, adherent centre. The vesicle contains but very little fluid. The above appearances are best seen when the calf has been put on the operating-table, and the surface of the abdomen and thighs gently and carefully washed with warm water to remove all dirt, but in doing so care is to be taken not to scrub the vesicles, else the tops are moved unnecessarily. If it has "taken" the vaccination well, it will be seen that all the vesicles are well marked, full, and firm. But sometimes one or more squares show badly-developed vesicles; that instead of there being one large vesicle on the square, the latter has two or three very small vesicles on its surface, each the size of a split pea—certainly they are characteristic, but very small; or one or more squares may have failed "to take"; whilst occasionally we come across a calf with not a single vesicle developed. Again, the vesicles may have been developed more quickly than usual, when it is found that at the 120th hour after vaccination they are "advanced," *i.e.*, approaching the pustular stage: they are soft and full-looking or swollen; the ring has lost its silvery characteristic and become creamy. The least advanced of these vesicles may still be good enough to yield some pure vaccine, but the crust must be thoroughly removed and thrown away, and the vesicle gently but firmly rubbed with a clean cloth. Those showing any pus must not be touched, for obvious reasons. Sometimes some vesicles, especially on the thigh, are surrounded by a considerable amount of erythema; one may take lymph from them, but it had better not be used for vaccinating human beings—a safer plan is to mix it with the "crusts" used for vaccinating another calf.

The material which can be taken from the vesicles is of three sorts:—

(*a*) The top crust—used at the Army Vaccine Institute for vaccinating other calves.

(*b*) The underneath crust or "pulp" with a certain amount of lymphoid fluid. This, owing to the method of procedure in the collection, is nearly always blood-stained.

(*c*) A serous fluid which flows through the skin if the vesicle be accidentally cut with the spatula when grasped by the forceps during the operation.

The top "crust" and the "pulp" contain the virulent material, or contagium, of Cow-pox, and it is they which should be conserved for vaccination (the latter for human beings).

Method of Removal of Vaccine.—The abdomen and thighs having been cleansed as mentioned above, the small table fixed near the operator, with the following upon it ready for use—some specially made forceps, two sharp scarifying knives, two blunt scalpals or spatulas, some small squares of linen for wiping the vesicles, a glass slab (all laid out on a clean cloth), and at one corner of the table a dish, into which the vaccine pulp is put when removed from the vesicles—a vesicle is seized between the left forefinger and thumb, a pair of forceps, held in the right hand, made to grasp it around its base, and closed so as to completely encircle it and cut off the blood supply. Then a sharp scarifying knife is used to remove the hard portion of the scab or top of the vesicle, which is transferred to the glass slab along with other tops to be removed and subsequently preserved—*vide* under heading "Crusts."

The vesicle is now carefully cleansed with a cloth, and scraped and pressed firmly with the flat surface of a blunt scalpel or spatula to remove all the solid material possible, along with a certain amount of fluid which exudes through the skin, owing to the pressure exerted; that which is removed being transferred, small portions at a time, to the receptacle at the corner of the table. This material, called "pulp," is thick and of a reddish colour.

As each vesicle is denuded of pulp, the forceps are transferred to another until the vaccine pulp has been removed from all, when the calf is taken off the table and sent to its stall.

The pulp is afterwards triturated in an agate mortar to reduce it to a uniform mass, mixed, if not to be issued on ivory points, with about its own bulk of a solution consisting of two parts of glycerine and one part of distilled water, and again triturated for a few minutes. It may then be issued direct for vaccination, or be stored in short glass tubes, corked so tightly that no air-bubbles are seen between the pulp and the cork, sealed with melted paraffin, wrapped in tinfoil, labelled "for issue" (noting number of calf and date of collection), and transferred to the lymph vault until required for issue.

The yield of lymph per calf varies in quantity sufficient to vaccinate 300 to 3,000 people, if one exclude calves which are failures.

The Crusts.—At the Army Vaccine Institute these are not thrown away, but are conserved for subsequent vaccination of calves; the crusts are clean, and, if one may use the term, perfectly "healthy," if ordinary precautions be taken to keep the vaccinifer so. They are triturated in a mortar to as fine a mass as possible, particles of foreign material, if any, being removed, and mixed with about half its bulk of glycerine and water. The mass is then put into glass tubes, corked, sealed with paraffin,

wrapped in tinfoil, labelled with the number of the calf from which it was taken and the date of collection, and marked "crusts for vaccination." At Aldershot the crusts have been used successfully for vaccination of calves nine months after collection, but how long they would remain virulent under the most favourable conditions in a hot climate we do not know.

The treatment of the calf after collection of the vaccine is simple; it is, of course, cramped and stiff after having been tied down to the operating-table for two or three hours, but if left quiet and fed as usual it soon recovers itself; in fact, the greater number of them commence feeding as soon as they get back to their stalls.

Issue of Vaccine.—1st., on "ivory points." When it is intended to issue vaccine on "points," no glycerine should be added to the pulp removed from the vesicles, as the glycerine prevents it from drying. The method of charging the points is to smear one side of the sharp end of the ivory points with pulp one after another, and place them on some sort of receptacle—an inverted plate, for instance—to dry, each point being separate from its neighbour, else they stick together. The platesful are then placed in a cupboard to dry thoroughly over night. Next day they are packed up thus: one end of a long strip of tinfoil is folded over an ivory point, and the process repeated again and again, so as at each fold to enclose a point, until there is a packet of ten or twenty; the packet is then rolled up in more tinfoil and packed in a box ready for issue.

Before these points are used by the surgeon for vaccination, they require to be thoroughly damped with a drop of distilled water.

2nd. In "capillary tubes." For these, "pulp" (plus glycerine) is used; and it is advisable to allow as much solid vaccine as possible to enter them, and not to fill the tubes too full, else, when sealing them at the flame, the lymph may be destroyed.

3rd. On "glass plates." It is recommended to use "pulp" and glycerine combined. There are required for this process two 1 inch or 1¼ inch glass squares, which are smooth and flat if to be used for small quantities of vaccine, but if for large quantities, say sufficient to vaccinate thirty people, one plate is hollow ground on one side, whilst the other which is to be placed upon it is smooth. In charging them, one, two, or more drops of pulp (plus glycerine) are placed on the centre of one square, which is held between the left forefinger and thumb; a smooth square of exactly the same size is placed upon it, so that the edges of both lie parallel, but not touching. They are then pressed gently together until the pulp spreads out a little, but not so far as to approach near the edge.

The edges of the two plates, which are still held by the forefinger and thumb, are now successively dipped into melted paraffin to the depth of one-eighth of an inch. One may repeat the dipping to ensure that no air can enter between the two plates. Care should be taken that the pulp is not touched by the paraffin. Each set of two plates is now rolled up in tinfoil and packed, with or without others, in a box for transmission.

Placing the Calf on the Operating Table.—The table is specially made for the purpose, with the top capable of being tilted up, and also provided with iron staples, to which leather straps are attached for fixing the calf's legs, and slots into which iron bars slide for attachment of the animal's head, whilst a broad leather strap goes across the middle of the table. There is a large hole towards one end of the table-top for the passage of excreta, and a special contrivance for urine. The calf is brought alongside the tilted table-top, its body bound by the broad belt, and head steadied between two iron bars by a rope; the table-top is revolved, or, rather, brought into its normal position, and whilst the calf is held down by an assistant its head and legs are bound—the fore-legs lying tied together to the table, the near hind one strapped down in another direction, and the off hind leg forcibly flexed towards the off flank, and fixed there by means of webbing. During the operations this off hind leg is steadied or held by an assistant to prevent accidents. By this method of fixing the abdomen and inner face of the thighs are exposed.

Taking the Calf off the Table.—To break the fall, two or more large bags filled with straw are placed on the floor, the calf is loosened, the bolts which fix the top of the table are drawn, the top tilted over, and when the calf is landed on the floor it is steadied by an assistant, who leads it quietly to its stall.

MILK FEVER.

BY P. G. BOND, M.R.C.V.S, PLYMOUTH.

A FEW notes, which I took (when making an inspection of a herd of dairy cows, 268 in number) of the preventive measures adopted by the owner against Milk Fever, may be of interest to some of the readers of the VETERINARY JOURNAL, and may possibly induce them to try the same treatment, with, I hope, the same happy result.

The treatment and management of the cows is as follows:—

They are allowed to go on in the ordinary way as regards food and exercise, etc., until within six weeks of the time of calving; they are then turned off to dry. Precisely at the end of the thirty-seven weeks of gestation, they are taken in, and kept in

day and night, and allowed hay (land or clover) and water only. No exercise is allowed. The amount of hay and water unlimited, and this is their only food for about two or three weeks prior to calving. After calving, which is always indoors, and the cow tied up, and within two hours of that event, a drench, consisting of the following, is given:—

℞	Magnes. Sulph.	lb. i.
	P. Pot. Nit.	℥ss
	P. Zingib.	℥ss

dissolved in three pints of boiling water, and given when cool. For three days succeeding parturition, the hay and water diet is continued, and rigidly adhered to. After this all danger may be considered over, and the cows are then turned out to grass, and have the ordinary supply of food, exercise, etc., as before.

This management is said to give splendid results, the percentage of losses from Milk Fever during the past three years being not one per cent., the actual loss being two only in the three years; and whereas formerly the losses were ruinous, and a club formed by the small dairymen in the neighbourhood broken up, now it is in a flourishing condition, and able to pay a dividend at Christmas, the risks being practically nil.

The arrangements of these cow clubs are, each member insures his cow for a certain amount, and pays one halfpenny in the pound per month; in case of the death of the cow from Milk Fever, he receives two-thirds of the amount insured. Occasionally cases of Milk Fever do occur, but they are mild in type, and usually yield to the following treatment. At the earliest symptom, about five to six pounds of treacle is given, a sack of bran dipped in very hot water is applied to the spine and kept hot; cold water cloths applied to the head and kept wet. Two or three times a day the back and loins are rubbed with turpentine, and morning and evening the following medicine given, Ammon. Carb. ℥ss, P. Nux Vomica ℥ij, with a pint of gruel. Emptying the rectum, use of catheter, or puncturing the rumen is never resorted to, and the case invariably recovers within forty-eight hours. The cows are of various breeds, and have been calved four, five, and six times. The benefit derived is claimed to be due to the dieting alone. From July 1st to October 13th this year, sixty-one cows had calved; no trouble with any of them. When I visited the farm, six others were tied in to calve. The cows in the ordinary way are kept on grass, maize meal, corn, and bran, etc., and are in splendid condition.

The breeds are South Devons (Hammers), Guernsey, Jersey, and Shorthorn.

I would add that forty weeks is considered by the owner the average period of pregnancy.

ADJUSTABLE SPLINT.

BY JAS. COOKE, F.R.C.V.S., SCARBOROUGH.

MESSRS. ARNOLD AND SONS have made for me a splint which will be found useful in all cases where the limb is required to be kept in a fixed position. It will assist in bringing about a favourable termination in cases of ruptured tendons, fractures, dislocations, and open joints. After the operation of tenotomy, it will be worth a trial, as by this means a rupture of the sesamoideal ligament—which is often diseased—may be avoided. By its use it will not be necessary to tightly bandage the *whole* length of the limb from the foot to the elbow, thus squeezing the blood out of the parts and causing numbness and swelling, thereby retarding the healing process and interfering with an open wound being properly dressed. The shoe will fit most-sized feet, and may be easily fixed without nails; the toe works on a pivot, and the heel may be adjusted to suit the foot by means of different-sized screws. The heel can be raised from the ground, if required, by means of screw frost-cogs (not shown in the drawing); the hinge-joints at the fetlock are rendered fixed by a thumb-screw; the splint by this means can be fitted to the limb at a suitable angle. At the knee, both in front and behind, there are projecting pieces of the upper splints which fit into openings on the lower splints. If it is not necessary that the limb should be fixed above the knee, the upper parts can be removed. It may be suitably applied to the limbs of cattle, or below the hock of the hind limb.

GENERAL REMARKS ON SKIN DISEASES.

TRANSLATED BY R. W. BURKE, F.R.C.V.S., VETERINARY DEPARTMENT, CORRESPONDING MEMBER OF THE ITALIAN VETERINARY ACADEMY.

(*Continued from page* 324.)

ECZEMA IN DOGS.

This is the principal skin disease from which dogs suffer, and occurs chiefly along the spine, about the root of the tail, and on the head; generally begins at the back of the neck and spreads to the afore-mentioned places. The extremities are also attacked, as well as the gluteum, sternum, abdomen, etc. Old dogs, confined much to the house, and very fat ones most frequently suffer.

Cause.—Principally originates in wounds and bruises, as well as through dust, dirt, fleas, lice, and ticks. The course of the spine is more specially the place where filth and dirt of every kind naturally collect. It was Zurn who first declared this disease to be due to a micrococcus; and Muller (*Deuts. Zeitschr. f. Thiermed. u. vergl. Pathologie*, 1880, p. 120) says that he has found micrococci in the small vesicles; and he further states that when these micrococci come in contact with unclean skin, they give origin to similar disease. In that case, every part of skin that is not clean is apt to suffer. Eczema often is a result of internal derangements, such as bad feeding, indigestion, excess of blood in the system, etc. All these act as predisposing causes of Eczema, by producing irritation of the skin.

Symptoms.—The disease has many forms, and each stage is different from another.

(1) In the first stage it is seldom remarked, except about unpigmented parts of the skin. First small eruptions appear on the skin, which early assume a dark colour and harden in the centre; they finally become confluent, and the skin is swollen and spongy, indurated and turgescent, and of a higher temperature. The hairs covering the eruptions become erect and are matted together. The slightest touch of the skin causes severe pain and itching. Where the eruptions disappear early, an erythematous inflammation of the skin frequently results, which often heals in this stage; less frequently, it is persistent. The appearance of the disease is subject to changes, so that from the first stage it may immediately run to the last stages.

(2) If the Eczema has a regular course, the small eruptions above mentioned become vesicular in character, which may be either isolated or confluent, and, in the beginning, are distended with a clear, watery fluid. They are seldom larger than mustard seeds, become early ruptured from scratching, and are often overlooked owing to the hairy skin of some dogs. These vesicles dry, and become covered by a thin film, which bursts from scratching, producing inflamed patches of skin and depilation. If the Eczema heal in this stage, the fluid discharges collect in the skin and produce the epidermis. The healed spots leave dark points behind devoid of hair, which show the seat of former blisters.

(3) The Eczema has a tendency to spread over a large patch, which results from confluence of many blisters on the skin. The skin is of a bright-red colour, the hairs being shed, and wet from excess of moisture, and constitutes the so-called *Eczema rubrum*. The wet patches are covered by a serous, sero-lymphoid, or a purulent exudation, and are very painful to the touch. The diseased patches show a great tendency to spread on contiguous, healthy

parts; and this is called the *Eczema exedens.* In eczematous inflammation, animals, from frequently rubbing against walls, etc., often contract a discharging and hæmorrhagic Dermatitis. The healing process in *Eczema rubrum* takes place through a desiccation of the exudates (*Stadium crustosum*); then regeneration of the epidermis sets in.

(4) Not infrequently the blisters form pustular or scratching Eczema, by which they become enlarged; then the contents of the latter become cloudy and purulent. The pustules, like the vesicles, may be either isolated or confluent, and are not readily seen in long-haired dogs. Frequently the blisters run together to form large patches of pus-infiltrated skin. The hairs are erect and matted together, being readily pulled out or already shed. The denuded surface of the skin is covered with a yellowish-green, sticky substance, and is painful to the touch, and often hæmorrhagic. The subjacent skin is thickened. The healing results from drying of the exudate into crusts. Under the crust, pus remains shut up for a long time, and in a few cases the matter penetrates the deeper structures and produces a phlegmonous inflammation and ulceration of the cutis. The latter more so, when constant movement or rubbing of the affected parts is kept up. It leaves behind hairless patches, with induration of the skin and copious desquamation. Very similar purulent inflammations of the skin originate without any previous blisters or pustules, through direct mechanical or chemical or other thermic irritation. The Eczema in all its stages may become chronic. In the simple papular and vesicular forms, the disease seldom becomes chronic; but in the pustular variety it does so frequently. It is of great moment in these cases to prevent the animals rubbing or scratching themselves. After severe forms of this disease, mostly witnessed in the summer months, a tendency to assume chronic characters is more marked. The change of skin produced by a chronic course of the disease is noticed in a permanent hyperæmia, increased temperature, and induration of the skin. When the disease is located on the spine, the skin becomes three or four times its normal thickness, the surface of the skin glazed, and a production of epidermis cells results, that appear as white or greyish-white scabs, which are readily shed (*Eczema squamosum*). By degrees the skin becomes dry and rigid, and is corrugated, and the hairs are placed in disorderly fashion, some of the latter assuming a curly shape. Compression and atrophy of the hair papillæ, through the new formation of the upper skin, produce the disorderly arrangement of the hairs. Such parts of the skin appear granulated, owing to the hypertrophy of the skin papillæ.

The appearances of an animal suffering from this disease are

excitement and restlessness, accompanied by great thirst. Only in chronic cases of Eczema, will this excitement be manifested. The patient seeks warmth. There is great nervous disorder, which in young and weakly animals often leads to death.

The course of the disease is from one to three weeks; but, when it becomes chronic, it may be prolonged to months, and with longer or shorter remissions it lasts for years, and is even incurable in many cases,

Differential Diagnosis.—This Eczema is often mistaken for purulent Dermatitis following wounds. It may also be confounded with burns and scalds, and the effects of extreme cold; and chiefly with Trichoph. Tonsurans; and lastly with the irritation of acari.

(1) Traumatic Inflammation of the Skin. The skin is non-sensitive, on which a purulent Dermatitis follows. The small papules, vesicles, and pustules seen in Eczema do not appear in traumatic inflammation, although occasionally they are not present in Eczema also; hence the difficulty in diagnosis.

(2) Herpes Tonsurans is distinguishable by the regular, round appearance of the eruptions; there is great itching; and microscopic examination reveals the presence of the fungus.

(3) Eruptions caused by the irritation of acari appear only on the head and the digits. They are transferable. There is marked itching. It is difficult to eradicate.

(4) Eruptions, due to sarcoptes, appear on soft parts of the skin, covered by little or no hair, as under the belly, the chest, and inside of thighs, is contagious, and very itchy.

The Eczema caused by acari, as well as that by sarcoptes, have a great resemblance to non-parasitic forms of Eczema. In these cases the microscope alone will decide the true nature of the disease.

Treatment.—The treatment will vary according to each stage, and in different animals. The disease would, as a rule, heal of itself, were it not for the itching that accompanies it, which is the chief difficulty experienced in the treatment of such cases.

(1) In the lighter forms of the early stages of Eczema (erythematous, papular, and vesicular) such medicines should be employed as will reduce inflammatory action and itching, as lead and zinc ointment or Hebra's ointment, or oxide or zinc powder, or the white precipitate of lead ointment, which should be sparingly used on dogs to prevent licking.

(2) In the discharging stages of Eczema, a six per cent. caustic lotion should be applied after washing the skin, which will generally produce a dry scab, and an early cure results. Dry powders are also beneficial in these cases, as iodoform and oak-bark, in the

proportion of one to ten. We recommend astringents, particularly tannin.

(3) In the chronic forms, verdigris ointment, which is particularly useful in the chronic impetiginous form of Eczema. In all cases the hair should be previously clipped. After the application a leather bandage must be used to prevent the animal scratching or licking itself. When the scab has fallen, tar ointment should be applied, and the animal washed daily and kept scrupulously clean. The tar ointment is especially useful, and can be easily washed off.

In the squamous form of Eczema, tar and verdigris are also the most efficacious applications. Ichthyol is much employed by German veterinary surgeons. The above are some of the remedies employed in the treatment of Eczema.

Internally, arsenic has been prescribed in advanced chronic cases, although its action is doubtful. It should be continued for several days, in doses of from five to ten drops of the Fowler's solution.

(*To be continued.*)

BACTERIOLOGY: ITS VALUE IN DIAGNOSIS.

BY H. M. SINGLETON, M.R.C.V.S., EALING, LONDON.

SINCE the discovery by Koch of the tubercle bacillus in human Tuberculosis, the value and certainty of bacteriology in diagnosis have daily increased. Nor is its value confined to Tuberculosis, in which the demonstration of the bacilli absolutely and conclusively determines whether the disease exists, for in other specific diseases of man and animals bacteriology furnishes us with a ready and certain means of diagnosis.

Among the diseases believed to be due to a germ, and in which a bacterium capable of producing the disease in a healthy animal has been proved to be present, may be mentioned Anthrax, Diphtheria, Glanders, Small-pox, Swine Fever, Leprosy, Scarlatina, etc., diseases to which the different species of animals possess varying degrees of susceptibility. Admitting, then, that we are given the power of correctly diagnosing what otherwise is a doubtful case, and of accurately ascertaining the true nature of the disease in question, it becomes us next to enquire how best we may avail ourselves of the advantages which bacteriology places at our disposal.

The busy practitioner, veterinary or human, whose acquaintance with the various anilins, and the most recent methods of using them, as adopted in the laboratory, must necessarily be limited, may not object to hear that a number of perishable staining fluids with an array of elaborate and expensive instruments are wholly

unnecessary. Provided with a microscope having a one-sixth of an inch objective, a few slides and some cover-glasses, he may mount his specimen, join in the popular hunt of the day, and take the field in his search after micro-organisms.

A cover-glass preparation from the blood or lymph of a dead animal can be made in the following manner: a droplet of the suspected fluid is taken up with a sterilised platinum needle made into a small loop at the point; spreading out the droplet thinly and evenly over the cover-glass, allow the cover-glass to stand on its edge for a minute or two to dry; take up with a forceps and with the prepared surface upwards pass the cover-glass three times through the flame of a Bunsen burner (lowered to an inch). If a platinum needle is not available make a glass pipette by heating a small glass tube to redness and draw it out; if used immediately the actual sterility of the pipette is manifest. Then place one drop of a saturated alcoholic solution of gentian violet or fuchsine; in one minute wash off with cold water, dry, and, if intended to be kept as a permanent specimen, mount in Canada balsam. Cover-glass preparations can thus easily be made; even with as simple a substance as writing ink, preferably Stephens' blue black, I have stained pathogenic micro-organisms; one drop, in lieu of the gentian violet or fuchsine, placed on the cover-glass and dried with filter paper, not washed off, readily stains; for several moulds it answers well, the hyphæ taking the ink and showing their outlines distinctly. Examining organs supposed to contain bacteria is not so easily accomplished. Sections can be cut with an ether microtome, of which there are several; I have had three others by different makers, and lately purchased Swift's ether microtome, which works admirably.

Portions of the liver, lung intestines, etc., must be hardened in one of the ordinary hardening fluids. Muller's fluid—prepared as follows, using the metric system, answers very well: Sodæ Sulphate grams xx, Pot. Bichromate grams xlv, cold water litres ij. The organs are cut into pieces of one or two inches cube, placed in a wide-mouthed jar and covered with the fluid, which must be changed every day for the first three, after that twice a week, and after that as often as it appears cloudy. Chromic acid also makes an effective hardening fluid; for ordinary purposes 1 per cent. is sufficient, *i.e.*, 1 gram of chromic acid crystals in 100 c.c. of cold water; this, too, requires to be changed frequently for the first few weeks; a little methylated spirit (one of spirit to two of the chromic acid solution) assists the hardening process in some tissues. Except for an urgent and incomplete examination, the time required for hardening in either of these fluids varies from two to four weeks. Before proceeding to cut the sections, the bi-

chromate and chromic acid solutions must be removed by placing the piece of tissue in cold water for some hours, changing the water occasionally, and afterwards placing it in mucilage, where different pieces of hardened tissues may also be kept until required for cutting, the jar being labelled to this effect. With the exception of the tubercle bacillus, which stains best if the tissue containing it has been hardened in alcohol, micro-organisms stain readily from either Muller's fluid or chromic acid solution, and from them transferred to mucilage.

Success in cutting the sections depends on the manner and extent of the hardening process; if the tissue has been over-hardened it becomes brittle, as when left too long in alcohol, and cutting a thin section then becomes difficult; the freezing, when the piece is placed on the microtome, having reached the exact hardening point, is a matter requiring the closest attention, and can only be acquired by practice, indeed every day adds to the experience previously obtained in this direction. Staining the sections supposed to contain organisms can best be done in the laboratory; the tubercle, leprosy, and other bacilli require special methods, and there alone can these methods be learned with anything like proficiency.

My object being to endeavour to show to the practitioner of the present day that the diagnosis of a certain case, otherwise difficult and obscure, with none of the ordinary symptoms, presenting none or few of the characters and prodromals of other cases of the same disease previously seen by him, differing too in some important particulars from those cases described in our text-books, can by bacteriology be accurately and scientifically diagnosed, detected, and described with unfailing certainty, rendering, too, the course to be pursued by the medical adviser, as to the adoption of preventive measures in view of the possibility of an outbreak, comparatively clear. In some cases of Equine Glanders, we have evidence of the value of micro-pathology; in this disease, pre-eminently contagious and seen under a variety of forms, sometimes with few or none of the characteristic lesions, the typical nasal ulcer absent, diagnosis becomes a matter of extreme difficulty, and gives rise to the most adverse opinions between veterinarians, one affirming, another denying that the disease is present; eventually the case is submitted to the licensed bacteriologist and the problem is solved.

But are we to limit the application and use of bacteriology to diagnosis alone? Specific diseases are known to possess a bacterium capable of producing its own distinct disease in a healthy animal. Other diseases, as Small-pox and Measles,

are only supposed to occur once in the same individual, one attack of the disease conferring immunity to subsequent ones. There are different theories to account for it; the plugging of the capillaries by the bacilli is one; the exhaustion theory says the organism consumes the pabulum necessary for the growth of its species; another theory assumes that the bacillus during its life-history "eliminates within its host a substance inimical to its own existence" (Dowdeswell). A principle, destructive and antagonistic to future comers, is evolved by the organism, and the animal is protected from another attack.

May we not hope that this substance, the product of its own formation, may yet be produced artificially; or has it not already been proved that when a culture medium in which a micro-organism has grown, has, with anti-bacterial precautions, been inoculated into a healthy animal, and the animal subsequently inoculated by a pathogenic microbe, such inoculation not only is not followed by disease, but the animal is rendered refractory to that disease from which the original microbe was cultivated? In the VETERINARY JOURNAL, vol. xxix., page 6, Dr. E. Salmon describes his experiments in this direction.

Editorial.

MEAT INSPECTION.

We have more than once drawn attention to the neglect of proper inspection of meat in this country, and to the ever-present danger attending this neglect. In this matter we are behind every European country; and the system of private slaughter-houses renders our position, so far as the public health is concerned, somewhat alarming. Until Parliament takes up the subject in earnest, and decides that this important item in the food of the people shall receive examination before it is allowed to be sold for consumption, it is hopeless to expect any change for the better. And when it is ordained that the slaughter of cattle, sheep, and pigs, and the inspection of their flesh, shall be carried out under rigid supervision, it will have to be settled who is to be entrusted with this most responsible duty. In France, Germany, Italy, and other countries, veterinary surgeons are selected as the persons who, by their special training and aptitude, are alone capable of undertaking this function. Of course, every care is observed that none but really thoroughly competent men are appointed, and the posts of abattoir and meat inspectors are usually thrown open to competition.

In this country, crude notions are entertained as to who are fittest to inspect meat, and it only too often happens that anyone—no matter how destitute he may be of special knowledge—can play the part of inspector. Therefore it is that we find all sorts and conditions of men, except the right ones, appointed to inspect and pronounce an opinion as to what flesh should and what should not be allowed for human food.

Of late medical men have aspired to this function, and some of them appear to believe that they alone can be entrusted to carry it out properly. At a meeting of the Yorkshire Branch of the Society of Medical Officers of Health, held at York on October 24th, Dr. Cameron, Medical Officer of Health for Leeds—who presided—is reported to have said that the first person who had the power of saying what meat was fit for human food, was the Medical Officer of Health; it was not for the veterinary surgeon to say whether tuberculous meat was fit for food; and he thought Medical Officers would be wrong if they allowed themselves to be pushed aside by veterinary surgeons. He further stated that veterinary surgeons were not competent to decide the question of fitness of flesh for human food.

It is possible the speaker was not aware, that in countries where medical men are at least as thoroughly trained as they are in England —in Germany, for instance—the Government does not recognise them as fitted to give a trustworthy opinion in this matter; and, consequently, they are never asked to do so. This should settle the question, for there are no better judges of the competency of medical men and veterinary surgeons than the Government Boards of Health of those

States. The veterinary surgeon is the proper person to examine animals and their products, and to certify whether they are suitable or unsuitable, sound or unsound. The medical man has no special training or knowledge to enable him to deal with such a matter, and he would assuredly be placed in a false position—and a dangerous one for the public—were he allowed to officiate as meat inspector. He has already more than he can manage in his own particular line, and he can well afford to leave matters relating to the domestic animals to be dealt with by those who understand what health and disease in them implies, and the indications which signify whether their flesh, milk, or other product, can be safely utilised by man.

REPORT ON ACTINOMYCOSIS BOVIS.

BY PROFESSOR E. M. CROOKSHANK, M.B.

(*Continued from page* 352.)

Professor Dick remarked that there were some cattle very liable to this form of disease under every circumstance in which a part is either inflamed from internal derangement or external injury; in the case of Mr. Hood's cattle the cause appeared to be the want of proper shelter. Although the disease had not to his knowledge shown itself to such an extent on any other individual farm, he was at once convinced by the cases at Inver-Brora that it was not so rare a disease as he had at first imagined, and he found on inquiry that the same disease had been observed in some parts of the neighbourhood. Mr. Hood found that a change of situation had often an effect in checking the progress of the disease, or of effecting a cure; in some instances he drove his cattle to another farm, where, although it was situated higher, there was more uneven ground, and of course more shelter. Mr. Hood stated that his cattle were kept in a well-sheltered straw-yard from October to May, but that they were put to the fields for several hours a day, and Professor Dick thought it probable from the circumstance of the straw-yard being comfortable, that the cattle would be thereby rendered more susceptible of injury when turned out to the cold and exposed fields in which they received their turnips. Professor Dick had met with the disease in the southern part of Scotland, where it was commonly known by the term *clyers in the throat.* He noticed the tendency of these tumours, instead of suppurating freely, to assume an indolent state, discharge a little from different points, and afterwards form sinuses, or undergo partial absorption.

According to experienced farmers, cattle bred "in and in" were very subject to clyers in the throat after they had attained their first year. These clyers affected their breathing at all times, but did not prevent their feeding till the act of deglutition was rendered painful by enlargement of the tumour. As regards the treatment of these tumours, Professor Dick recommended that the animals should be confined in a comfortable byre or shed, the tumour was to be opened if matter were felt, but if not a blister was to be well rubbed into the surface of the swelling, and repeated until there was either absorption of the tumour or formation of an abscess. If this plan did not succeed, an energetic action was to be excited in the tumour by well rubbing into it an ointment composed of iodine and lard until absorption of the tumour took place; and if it were found that the tumour resisted these remedies it was to be freely incised with a lancet, and a little tow put into the wound twice a day smeared with blistering ointment, or dipped in a strong solution of sulphate of copper. If the disease raged to

the extent to which it existed at Inver-Brora, it was recommended that in order to procure proper shelter, the attempt should be made to try the slow but sure remedy of belts of planting, which would protect both the cattle and the crops, and improve the farm for every kind of agriculture.

1841.—I will pass on to give an account, the first, as far as I can ascertain, of another morbid condition which we now would recognise as Actinomycosis.

The following description of this disease in a cow was sent to Professor Dick, *Veterinarian, vol.* 14, *p.* 13, 1841:—

"I beg to request your opinion regarding the disease of a cow, respecting which the owner and myself do not perfectly agree. I will hereafter send you the morbid parts when they are sufficiently macerated. I am, at present, disposed to trace it to some mechanical injury, but none of the servants knew anything about it: there was no appearance of injury on the muzzle, and she seemed to masticate and ruminate her food as usual. It was a little girl who, after taking the cows to water, first discovered that something was the matter with the animal's mouth . . . . . On examining the cheek externally there appeared an enlargement of the inferior maxillary bone at its anterior part. I then opened the mouth, and to my surprise found that all the teeth were gone, except the two anterior molars, which were loose, one of which I extracted with my finger and thumb. The palate was detached from the roof of the mouth nearly to the centre of it, and there was a fungus filling up and sprouting about the cavities that had been occupied by the teeth. I removed as much as I could of this fungus growth by means of a pair of scissors. I was compelled to repeat this operation three or four times, for the fungus grew afresh, filled the animal's mouth, and prevented her from eating. I directed the mouth to be washed with a solution of alum, but with not the slightest advantage. There appeared to be a large abscess in the masseter muscle, and another a little below the parotid gland. I opened both, and found them to contain a great quantity of fœtid pus. A solution of chloride of lime was applied to them frequently, and twice in a day the ulcers were dressed with digestive ointment, but without the slightest benefit. The owner had been absent during the greater part of this time. He now returned, and I immediately told him I had no hope of the case, and advised that she should be destroyed. He objected to this, and wished to try something of his own; he did so, but without the slightest avail. He would not even then destroy her, but suffered the disease to pursue its ravages; and she lived from the time that I was first desired to attend on her—17th March—to the 12th June. During this period she was supported by soft food. The following was the result of the inspection of her after death:—The parotid gland on the left side was enlarged to the size of a calf's head, and much indurated. There was a tumour near to the root of the left ear, of the size of a child's head, in the interior of which was a cavity filled with maggots. At the posterior end of the lower jaw there was another large tumour filled with fœtid pus. On laying the mouth open, by cutting away the lower jaw, we found that the large tumour in the cheek opened into the mouth. The orifice was large, and the saliva could flow through it. *The tumour consisted of a mass of fungous flesh which extended half way across the roof of the mouth, and down to the first of the upper teeth; notwithstanding which the animal could take its food, for the rumen was nearly filled when we examined it. The left upper jaw was decayed away and absorbed, the tongue and lower jaw were sound, as was likewise the throat, and all the viscera, except the right lobe of the lungs, which was filled with miliary tubercles.*"

To this letter, Professor Dick replied that the disease was not uncommon in cattle; it was well known as attacking the maxillary bones in the human being, and was denominated by surgeons *osteosarcoma of the maxillary bones.*

He added that the remote cause seemed to be *a scrofulous diathesis*, and the exciting cause most commonly disease of the molar teeth, or some accidental injury. In the early stages he recommended that the teeth connected with it should be extracted. If an abscess had formed it was to be freely opened and washed out with diluted muriatic acid; the acid was also to be freely applied to the fungus, or nitric acid might be used for the mouth. He stated that he had several specimens of this disease, but that the appearances were variable after death, and that he would be thankful for any preparation of it.

In the same year Mr. James Howell applied for information as to the nature of a disease in an animal under his care. The case was described as follows, *Veterinarian, vol.* 14, *p.* 543, 1841:—

"The animal is a three-year-old heifer. About five or six weeks ago, the owner observed that she was losing flesh, that the saliva was dripping from her mouth, and that her cheeks appeared enlarged. A few days afterwards he examined her mouth, and found a considerable portion of masticated food impacted between the molar teeth and the muscles of the cheek. This he removed, but a few days afterwards he observed that there was great difficulty in ruminating. He then examined her teeth, but could not detect anything amiss with them. A week ago, he requested me to see her. I found her standing up, and trying to chew her cud. She evinced much *tenderness of the mouth, the saliva was flowing profusely, and the tongue slightly protruded.* She was very much emaciated, and her milk nearly gone. Upon examination, I found her *tongue enlarged, appearing shorter than natural, and hot, and very tender* when pressed with the hand. There is considerable enlargement in the submaxillary space, the tongue is almost of a natural colour. She is very eager for food, but the poor thing cannot manage now to get much of it over the tongue. All the treatment I have ordered is an application of alum and verjuice.

"Can you inform me what is the nature of the disease? Is it cancer?

"There is a farmer living in this neighbourhood who says he had two cases similar to this some years since, that they both died, and that it was *cancer of the tongue* that destroyed them. I have tried to find in the work on cattle written by you, and in my other works, anything bearing upon it, but am unable so to do. I should, therefore, feel greatly obliged to you by your giving me your opinion upon it."

To this letter Mr. Youatt answered as follows:—

"You give me rather a puzzling case to solve. I am much inclined to think that the disease of the cow's tongue is of a cancerous nature, and in the desperate situation in which the poor animal is, I should at once have recourse to decisive measures, as some would deem them. Ascertain on the superior or dorsal portion of the tongue, the situation at which the tumour and the tenderness are greatest. Form to yourself, as accurately as you can, some notion of the depth of the tumour or abscess, and freely cut down upon it with the scalpel or curved bistoury in a longitudinal direction. The bleeding will be easily managed by means of the torsion-forceps, or the cautery. A lotion of chloride of lime may perhaps be needed. I should be thankful for an account of your proceedings."

Mr Youatt received the following letter in reply:—

"I received your letter of the 4th instant, and immediately explained to the owner of the poor beast the plan of treatment suggested by you for her relief. I did not perform any operation upon her tongue, as upon carefully examining the same I could not perceive any fluctuation; therefore thought it useless to cause her unnecessary pain by an operation. The owner had her killed on Tuesday last. She was very much emaciated. I examined her tongue and surrounding parts, and found it, as before described to you, enlarged from near the root almost to the tip, but very little altered in colour. *Upon cutting into*

it great resistance was offered to the knife, the cut surface feeling hard and granular. In some parts there were little abscesses containing thick yellowish matter of the size of a horse bean. The whole substance appeared studded with tubercles. The disease extended throughout the whole of the tongue. I believe the disease may be termed 'scirrhus,' or what is vulgarly called cancer of the tongue."

1843.—Continuing to trace the history of these various affections, I find that Mr. John Relph of Sebergham contributed a paper "On Tumours about the Head and Throat of Cattle," *Veterinarian, vol.* 16, *p.* 126, 1843. He stated that a certain kind of *indurated tumour*, chiefly situated about the head and throat, abounded in his practice more than all the "accidental productions" met with among cattle, with the exception of wens. The affection often commenced in one of the thyroid glands, which gradually increased in size, felt firm when grasped, and evinced very little tenderness. The attendant was generally alarmed by a snoring or wheezing noise, emitted by the animal in respiration, before he was aware of the existence of any tumour; the latter continued to increase, embracing in its progress the adjacent cellular and muscular tissues, and frequently the sub-maxillary and parotid glands. It became firmly attached to the skin, through which an opening was ultimately effected by the pressure of pus from the centre. "*The swelling often presented an irregular surface, and various centres of maturation existed, but the evacuations only effected a partial and temporary reduction of its bulk in consequence of the continued extension of the morbid growth and ulcerative process which often proceeded towards the pharynx, rendering respiration and deglutition still more difficult, until at length the animal sank from atrophy or phthisis pulmonalis.*" Mr. Relph concluded that these tumours bore *some resemblance to cancer* in the human being, and he determined to attempt extirpation. In the early stage he believed that the tumour might be dispersed by the general and topical use of the iodurets, but they were useless after suppuration had commenced. As soon, therefore, as the nature of the tumour was clearly developed, its removal was attempted. If the growth projected by the side of the larynx, the beast was cast and the occiput turned toward the ground and bolstered up with bundles of straw. If the skin were free, an incision was made parallel with the trachea, but if firmly attached to the tumour, curved incisions were made and the healthy skin reflected beyond the margin of the tumour. The edges were held back by an assistant, and all the tissues that exhibited the slightest change from healthy structure were removed. The wound was then treated in the ordinary way. Mr. Relph pointed out that as the success of surgical treatment depended on an entire removal of the diseased parts, and as the sub-maxillary and parotid gland with important branches of nerves and blood-vessels are often involved, there must be no hesitation in removing the former or dividing the latter. The weight of these tumours in his experience varied from a few ounces to some pounds. One that had been removed from a two-year-old Galloway bullock weighed 6¼ pounds. A considerable portion of the skin that covered it was excised and included in the above weight. It involved the parotid gland, and it was necessary to divide the trunk of the carotid artery and the jugular vein.

On another occasion Mr. Relph was called to *a bull labouring under alarming dyspnœa* that had gradually increased. No external enlargement was perceptible, but on introducing his hand into the mouth a large *polypus* was found hanging from the velum palati into the pharynx, greatly obstructing the elevation of the epiglottis and the passage of food. After performing tracheotomy to prevent suffocation, a ligature was passed round its pedicle. A section of one of these tumours is described as "mostly displaying *several abscesses, with matter varying in consistency, and often very fœtid,*

enclosed in what seemed to be fibro-cartilaginous cysts." Osseous matter, he judged, from the grating of the scalpel upon it, occasionally entered into the composition of these cysts. In another case "*the right facial region of a cow presented an enormous tumour extending from the eye to the lips, which was mistaken during life for a periosteal enlargement, on cutting into which the mistake was evident. There was scarcely a trace of the original bones beneath the mass. Even those forming the nasal sinuses on that side were replaced by a formation much resembling the cysts before alluded to, and full of abscesses.* The disease involved the orbital cavity where the osseous matter was being removed and the morbid structure deposited."

In the same year Mr. Relph met with another malady, which he regarded as similar to the affection described by Mr. Howell, *Veterinarian, vol.* 16, *p.* 443, 1843. A cow was extremely emaciated; the animal tried to eat, but was unable to masticate, and there was a profuse flow of saliva. "*The tongue was much enlarged, the dorsum towards the apex studded with irregular thick-edged ulcers, with very extensive and hard bases, which emitted an offensive smell.* On the body of the organ to the left of the median line a fluctuating elevation was felt, and on making an incision into it a cavity was opened about an inch in length, which probably contained serum; at least, no pus was distinguishable among the saliva." A lotion of chloride of lime was directed to be used alternately with one of alum, and the animal was fed with gruel. As there was no improvement in the condition of the cow, a solution of iodide of potassium with sulphate of copper, and biniodide of mercury ointment were applied daily to the jaw and throat externally. The owner soon observed some improvement, and by persevering with these applications the animal recovered. The case was described as "Scirrhosity with ulceration of the tongue in a cow."

Again in the same year, Mr. Oliff, of Gasberton, published a method of treatment which in some parts of the country is employed to the present day, *Veterinarian, vol.* 16, *p.* 647, 1843. This paper, entitled "On Swelling under the Jaw in Cattle," was written with a view to describing the treatment, by a medical practitioner, of indurated tumours.

A heifer was observed to have a very considerable swelling under and between the jaws, interfering with her breathing, which could be heard at a considerable distance, and threatening suffocation. "The swelling was found to be scirrhous or indurated, *and a piece of rough common brick was procured and rubbed upon it until the part was tender. A saturated solution of sulphate of copper and sulphuric acid was prepared, and a line traced round the edge of the tumour with the solution about three-quarters of an inch in breadth, so as to include the whole of it,* and some cruciform lines from one edge to the other of the same breadth. If more of the surface were touched with the solution, it caused a too extensive sloughing of the cuticle, which was to be avoided." The dressing was repeated in the course of a few weeks, and after a few months the animal had recovered.

1844.—In this year, Mr. Barlow, of Oak, near Manchester, gave an account of the treatment of some valuable cattle, *Veterinarian, vol.* 17, *p.* 534, 1844. I think there can be very little doubt as to the nature of the disease from which one of the cows was suffering, for the case is similar to some that have been already described, and it is distinctly stated that the tumour was recognised to be *the same as what is called a clyer in Scotland.* The cow had been under the care of a noted cowleech, who gave her up as incurable on account of what he called cancer in the throat. Mr. Barlow described the case as follows:—

"On seeing the animal she indeed presented a hopeless appearance. She was down, with the nose extended so as to breathe as freely as possible, which effort was accompanied by an exceedingly loud snore at each in-

spiration and expiration. The rumen was also much distended; but for a week the beast had only taken gruel, which was forced upon her. She rose with great difficulty, and the 'cancer' was indeed an enormous one, presenting, on the near side, an enlargement equal in size to a child's head, and causing considerable protuberance on the contrary side. From the pressure on the larynx, the pomum adami seemed ready to come through what now felt only a thin fold of tense skin where it was usually slack and soft." The removal of the tumour seemed to be the only satisfactory treatment. An incision commencing at the ear was carried down to the inferior part of the parotid gland, and another incision, about six inches in length, was made at right angles with its inferior extremity somewhat below the sub-maxillary branch of the jugular vein. The skin was dissected back so that the tumour was fully exposed; and an endeavour was then made to dissect down to its base. The temporal had to be tied, as also several other arteries, but the tissues were so disorganised that the vessels could scarcely be recognised. By continuing the dissection, and tying the various bleeding vessels, the whole growth was eventually removed. For some time after the operation there was considerable hæmorrhage, but the animal recovered. After a time she appeared to be quite healthy, and became a good milker.

1845.—Mr. T. W. Nobbs, of Cerne, met with a case of scirrhous tongue, and sent the specimen to Professor Simmonds, with a brief history of the case, *Veterinary Record, vol.* 2, *p.* 338, 1845.

"About the 10th of October last the ox was observed to foam at the mouth considerably, and about the 20th to have lost flesh, when he was taken into the yard. On giving him some hay, he could not masticate it, but threw it out of his mouth again. On examination, *the tongue was found to be enlarged and indurated at the root.* Nothing was done till the 1st of November, when an enlargement had made its appearance under the jaw—this I have observed to be the case in some that have come under my care. Mr. Kerby inserted a seton about ten inches long from within four inches of the lips to the neck, which I am told discharged freely; but, despite all that was done, the ox continued gradually to lose flesh, and on the 7th instant, being unable to get up, he was destroyed."

"I have seen two cases of this kind recover by freely lancing the tongue its whole length and applying a strong solution of iodine over it three times a day, also at the same time using the ointment of iodine externally. Nevertheless, I consider the better plan is to destroy the animals when we are satisfied of its *cancerous nature;* for if they recover, the cure becomes very tedious and protracted, and with the exception of the two named the remaining five out of seven cases were lost."

This case called forth the following remarks by Professor Simonds, which afford an admirable résumé of the knowledge of this disease possessed by veterinary surgeons so far back as 1845.

"The affection termed scirrhous tongue is oftener met with in the ox tribe than in any other of our domesticated animals, and, like many other diseases, it is too frequently confounded with maladies which differ very essentially in their nature from it; thus an attack of acute inflammation of the tongue (a disease by no means unfrequent among cattle), accompanied with much swelling of the organ, and a total incapacity to collect or masticate food, is often mistaken for scirrhus. Glossitis, it is true, may lay the foundation of chronic induration of the organ; but even this result differs materially, in a pathological point of view, from true scirrhus, although practically it may not offer a greater chance of cure. These cases of structural change depending on inflammatory action, are generally to be traced to some exciting cause, and rarely exist singly, but on the contrary,

several of the herd are found to be affected at the same time. They have been known, likewise, to succeed an attack of eczema epizootica, an instance of which was laid before the members of the Association by Mr. Bainbridge. The causes of scirrhus are obscure, but they are evidently of a constitutional nature, as the disease is generally insidious in its attack, gradual in its development, and fatal in its consequences—the poor beast dragging out a miserable existence, no mode of treatment which has yet been adopted affording much relief. Besides these peculiarities, we observe in the early stages of the malady that there is but little swelling present, and never that redness of the tongue and buccal-membrane with great heat of mouth, discharge of ropy saliva, pain on the application of pressure, and protrusion of the organ from the mouth which mark an acute inflammatory attack. The tongue slowly increases in size, and the animal makes such strange efforts to employ the organ in collecting its food, or in directing it upon the molar teeth, that often the owner's attention is first directed to the beast by this action, associated with the loss of general condition. An examination shows the organ to be hard and unyielding to pressure, and but slightly movable; there is but little change of colour present, but if any, it will be found in isolated patches. As the disease advances these spots assume a darker hue, and the process of ulceration commences in them, but, like bovine cancer, is general; there is but little disposition to ulceration compared with similar cases in the human subject. In some extreme instances the tongue hangs from the mouth, and the animal cannot gather sufficient aliment to prevent inanition. The disease has little disposition to extend to surrounding structures, but in most instances it is accompanied in its later stages by a swelling under the jaws; this, however, is seldom anything more than a serous effusion into the cellular tissue surrounding the parts."

1846.—I now pass on to describe a very interesting case which was published by Mr. Younghusband, of Greystoke, "Polypus in the throat of a heifer, eradicated by torsion," *Veterinarian, vol.* 19, *p.* 496, 1846.

A two-year-old heifer suffered from a most distressing cough, accompanied by difficulty of breathing, and a constant discharge of saliva from the mouth. When not engaged in feeding, the head was kept protruded, thus indicating that it was a portion of the upper part of the air passages that was suffering from some abnormal affection. Mr. Relph was called in consultation and detected a polypus on the upper and back part of the mouth, which by its situation obstructed the breathing, and was causing all those uneasy symptoms from its pressure. An attempt was made to remove the polypus by a ligature. By way of preparation the operation of tracheotomy was performed, and a ligature was then placed round the neck of the polypus. Considerable difficulty was encountered owing to the situation in which the tumour was placed, and the shortness of its neck. On a subsequent examination it was found that the ligature had disappeared, while the polypus remained, and the animal was no better. A fresh ligature was therefore applied, but no signs of any separation of the polypus took place. It was, therefore, resolved to employ torsion as a means of getting rid of the growth; the hand in the place of forceps was introduced into the mouth, and the polypus was completely detached at the third turn. The heifer coughed a few times, and discharged a little blood, but no hæmorrhage of any consequence followed the operation. A few days afterwards the cough had subsided, the breathing became tranquil, and the animal made a good recovery.

1864.—Though so-called scirrhous tongue had been frequently observed and described by veterinary surgeons in England, it seems that it was some time before it received the same amount of attention in Scotland. But in 1864 a case was very fully described in the *Edinburgh Veterinary Review, vol.* 6, *p.* 153, under the title of "Cancer of the Tongue in an Ox." The specimen

was sent by Mr. Andrew Simpson of Kincardineshire to the editor of this journal, accompanied by the following letter:—

"I have sent you per rail a box containing the tongue of an ox five years old. As it is a *rare case*, I was anxious to get your opinion of the nature of this disease. It appears to be Carcinoma, and yet I cannot, by microscopical examination, detect any distinct cancer cells. Besides the parts sent there was a very large tumour of the same nature as the rest, extending from the inferior surface of the atlas, enclosing the trachea and gullet, in fact forming a ring, a segment of which you will find '*in situ*.' I may say in one word, the other organs in the animal were in a perfectly healthy condition. I was careful to ascertain this, as I expected to find morbid lesions in some of the glandular organs, especially in or on the mesenteric glands, but such was not the case, and the disease, whatever it is, was quite local, so far as I could ascertain. You can at once conceive the symptoms that would indicate this affection, the animal's head hanging down, copious flow of saliva, the tumours easily felt externally, and the condition of the tongue seen on looking into the beast's mouth. I may say the skin had become very dirty, the hair coming off in patches, and for some time there had been an abundant crop of lice, the tongue was very much larger when taken out than at present, from serous effusion. The history of the animal is as follows:—The stot was bought at one of the markets in this neighbourhood in January, 1863, along with a lot more beasts, and put into a comfortable court with the rest. Very shortly thereafter I was called to look at him, as he would not feed. I found him standing just as if he had got a potato or some other obstruction in the throat. On examination I found a hard tumour, about the size of a goose's egg, situated between the branches of the sub-maxillary bone. I concluded that this was the cause of the difficult breathing, and with a view to hasten the maturation of the tumour, I rubbed in a pretty smart blister, ordered the animal to be taken from the court and fastened up in a byre. I also directed the owner to feed him liberally, with a view to get him off as soon as possible. He got oil cake, etc. After this he appeared to do well, and I never heard any more about him until a few days ago (25th of January, 1864), when being at another case at the same place, I was requested to look at the stot. I was told he had done ordinarily well since I blistered him till about a month ago, when he began to lose flesh rapidly, and refused his food. As soon as I saw the tongue, and the evident distress it was giving the animal, I ordered him to be destroyed. There was one interesting fact I discovered after he was killed. He was bought for an eighteen months beast, and appeared to be about that age at this time, but in truth he must have been rising four years, as he had a full mouth when killed. This shows the disease was not of recent origin in him, for had he thriven during his first year, he would have been as large as he was at five; in fact, he was about the strength and size of a very good one-year-old. I cannot think this is a case of Gloss-Anthrax, because there was never any great constitutional disturbance. It seemed to be more a mechanical impediment than constitutional disease; and moreover, Gloss-Anthrax runs its course for good or ill in a very short time. I also think it is more than a case of Glossitis. You will do me and others a great favour if you could give some hints on the pathology and morbid anatomy of the subject sent, what might be the cause of it, etc."

In answer to the pressing inquiry as to the nature of this disease, the following remarks were published:—"*The tongue sent has hard nodular eminences numerously scattered over its dorsal surface, but especially on its borders and lower aspect. These vary in size from that of a pea to that of a hazel nut, and seem to extend deeply into the structure of the organ, and the whole of the muscular tissue is seen to be interspersed with tumours of a similar kind.* Their cut surface has a greyish hue, and on scraping yields an

abundant whitish fluid strongly resembling cancer juice. In this fluid were detected cells with several large nuclei, evidently cancerous, although most of the masses situated externally had an indurated feeling like scirrhus. Many of those within the organ were more soft and compressible, one of the largest, indeed, located at the root of the tongue, between the two genio-hyoglossi muscles, had in part assumed a semi-liquid appearance, not at all resembling pus, however, but having more of a gelatinous consistency."

1874-1877.—This disease in the tongue does not appear to have invited further inquiry until 1874-1877. In 1874, Mr. Isaac James, of Corsham, sent to the Royal Veterinary College, London, the tongue of a two-year-old steer, with the remark that he had had experience of similar cases. In 1875, Mr. A. D. Dale, of Billinghurst, Sussex, sent to the same college the tongue of a two-year-old heifer, remarking that it was the third which had been destroyed by the same disease in his practice, and that there was yet another one similarly affected. In 1875 Mr. William Penhale, of Barnstaple, sent the tongue of a bullock which during life exhibited an enlargement of the throat, with difficulty in mastication and swallowing, and in 1876 Mr. Goforth Wyer, of Donnington, sent the tongue of a heifer, stating that the disease was *frequently met with in the Fens of Lincolnshire*, and that within the past three months he had been called to four cases of the same kind. Two of them had recovered under treatment, which consisted of administering calomel and iodide of potassium internally, and nitrate of silver or weak nitric acid to the tongue. Mr. Verney, of Blockley, in 1876, and Captain Russell, of Grantham, in 1877, also sent examples of this disease. Notes of these cases, together with replies to questions submitted to the senders by Professor Axe, were published in the *Veterinarian*, 1877, under the title, "Observations and experiments tending to elucidate the pathology of a disease affecting the tongue of the ox."

1881-1882.—A few years after this publication a very interesting discussion took place in the pages of the VETERINARY JOURNAL. This discussion originated in a paper by Mr. A. E. McGillivray, of Banff, N.B., "On So-called Gangrenous Ulceration or Degeneration of the Mouth and Contiguous Parts in Young Calves, etc. (Tuberculous Stomatitis ?)," VETERINARY JOURNAL, *vol.* 13, *p.* 1, *January*, 1881.

The disease occurred chiefly in young calves. The symptoms were profuse salivation, very fœtid breath, and difficulty in mastication. These led to an inspection of the mouth, when the disease was found inside the cheeks, about the tongue, gums, in the pharynx, or very rarely about the entrance to the larynx. There were cheesy deposits or a degeneration of the soft parts inside the cheek and neighbouring parts. Mr. McGillivray regarded this cheesy material as tubercular, and suggested the term *Tubercular Stomatitis* for this disease. The dorsum of the tongue, the sides and tip were recognised as the usual seat of the disease, but not necessarily all at once in the same patient.

Generally the tongue alone was affected, but cases also occurred in which the tongue and cheek or gum were effected on the same side. When the gums were found to be the seat of this disease there was sometimes necrosis of the inferior maxilla. In such cases it was found necessary to extract from one to four of the temporary incisors, the gums and bone surrounding the teeth being alike implicated. This phase of the disease was oftenest seen in one-year-old cattle. The most serious cases were those in which this diseased deposit or degeneration took place in the pharynx and at the entrance to the larynx. Three or four cases had been met with in which the calves could not bring their jaws together owing to the deposit which occurred at the junction of the jaws behind the two last molars. In one case the disease spread into the pharynx, almost, if not altogether, blocking up the

entrance into the larynx. Treatment consisted in thorough excision of every vestige of diseased deposit or degenerated tissue, free application of powdered sulphate of copper to the remaining ulcerous sores, and good doses of sulphate of soda twice daily.

Mr. McGillivray made a further contribution on "Tubercular Stomatitis" in the VETERINARY JOURNAL, *vol.* 12, 1881. Mr. Fleming took part in the discussion which followed, and strongly opposed the opinion of Mr. McGillivray that this disease was tubercular, VETERINARY JOURNAL, *vol.* 13, 1881, *p.* 153. Mr. Fleming held that there was nothing analagous to Tuberculosis in the lesions, and maintained that the disease was really Diphtheria in calves, an opinion supported by Mr. Smith, of Grantham, VETERINARY JOURNAL, *vol.* 13, *p.* 249. Mr. McGillivray replied, and strongly opposed the designation of the disease as Diphtheria, VETERINARY JOURNAL, *vol.* 13, *p.* 253. Mr. Fleming endeavoured to answer Mr. McGillivray's objections, and concluded his paper on "Diphtheria in Calves" by expressing a hope that practitioners would supply him with specimens which might enable him to set at rest by experiment and otherwise some of the uncertainty which still haunted him as to the exact nature of the Tubercular Stomatitis of Mr. McGillivray, VETERINARY JOURNAL, *vol.* 13, *p.* 311. Mr. Gunn, of Balloan, Muir of Ord, N.B., fully concurred in Mr. McGillivray's opinion as to the tuberculous nature of this affection, VETERINARY JOURNAL, 1881, *p.* 170. Examination of the morbid material, in his opinion, clearly indicated this, and, further, at one farm where he had reason to know that Tuberculosis existed, he had four young cattle with Tubercular Stomatitis, which were under treatment. This consisted in scraping out the ulcerated spots, or removing with scissors if they occurred on the lips, and then applying solution of caustic potash. If the larynx were affected there was no hope of successful treatment.

This was followed by a paper by Mr. J. C. James, of Thornbury, Gloucestershire, on "Gangrenous Stomatitis, Tuberculous Stomatitis, Diphtheritis, a Disease Affecting the Mouth and Tongue of the Ox," VETERINARY JOURNAL, *vol.* 13, *p.* 315, 1881. The communication was made with the object of suggesting a mode of treatment which he had found of value. In his experience the disease had been most prevalent in one-year-old and two-year-old beasts. He had always regarded it as tubercular, and his views agreed with those of Mr. McGillivray. As regards treatment, ten years previously he cut and scraped the tongue and used every chemical agent he could think of as likely to do good, but without success. Recovery was the exception until he was induced to try Tinct. ferri perchlor., and for the last seven or eight years recovery had been the rule. Tinct. ferri pechlor., with an equal quantity of water, or Liq. ferri perchlor. fort., diluted with two parts of water, should be well applied every day to the affected parts of the tongue or gums; most inveterate cases yielded to this treatment.

Mr. Metherell, of Brighton, also took part in the discussion by contributing a paper on "Gangrenous Stomatitis, Tuberculous Stomatitis, Diphtheritis," VETERINARY JOURNAL, *vol.* 13, *p.* 409, 1881. It is obvious that the disease of which Mr. Metherell writes is Actinomycosis. He says:—

"We must remember that of all organs it is the tongue which is insidiously invaded, nearly the whole of which may be involved and permeated by this destructive agency . . . . To those who have not seen this disease, I will remark that, at first, the subject of it will lose flesh, and will soon show a difficulty in gathering food, even from the manger or crib, and in masticating it, also an inability to graze. Then will be noticed a flow of saliva, an occasional smacking of the lips, an accumulation of frothy saliva about the mouth, with serous effusion in the inter- or sub-maxillary space. The veterinary surgeon naturally examines the mouth, *and sees an appearance*

generally about the dorsum of the tongue, like a piece of pancreas imbedded there. The animal is then cast, and whilst the mouth is kept wide open by means of a balling iron, the operator, using an ordinary fleam, makes deep incisions into the parts affected, and dresses them. The mop of tow, as described by Mr. James, will be found useful, and we have had good results from a solution of nitrate of silver, one stick to six ounces of water. Having in view the intense, protracted, and systematic torture involved in the periodical cutting and dressing, and the fact that in any case the animal becomes a skeleton, and again, that he will probably never graze well, it is both humane and politic to advise slaughter in many cases, when the owner is willing, because the result of treatment seldom satisfies him. *We have found these cases associated with what in some parts are called wens*, and which, whether taking the form of abscesses or not, are best treated with sulphuric acid, applied with friction to their bases by means of a suitably-shaped piece of brick or stone, or a piece of hard wood. We have a case now, in a bull, of a cluster of four wens in a line along the lower edge of the jaw."

This disease now came to be usually designated "Tubercular Stomatitis," and Mr. McGillivray described four more cases, VETERINARY JOURNAL, *vol.* 14, *p.* 238, 1882.

In the first of these there was a deposit in the palate. The treatment which was successfully adopted consisted of repeated dressings with sulphate of iron. The second was a young calf, one of twins, which had been removed to a neighbouring farm. About four weeks afterwards, ropy saliva began to dribble from the mouth, and on subsequent examination a large, yellow, cheesy deposit was found about the middle of the tongue. The deposit was scraped off, and the resulting sore was repeatedly dressed with a very strong solution of sulphate of copper and sulphuric acid. The third was a cow, which suckled the calf, and was somewhat similarly affected. In the fourth case, the deposit was about the roots of the incisor teeth, with swelling of the lower lip. The diseased material was scraped away, leaving a red, raw, ulcerous sore, which was ordered to be dressed twice a day with copper and carbolic lotion.

Fresh cases were also reported by Mr. Muir, VETERINARY JOURNAL, *vol.* 12, *p.* 166, 1882. In one case there was profane dribbling of saliva, the breath was very fœtid, and the animal was unable to eat. On the sides of the tongue, posteriorly there were characteristic lumps, that on the left side being the larger, and having the appearance of an indolent ulcer. The mucous membrane and superficial muscular tissue between the lumps and along the raphe for about an inch had a pale bluish tint. The affected parts were dressed with chloride of zinc. The patient was in a small field with five other calves; but these remained healthy. The diseased calf, a week after examination, was subjected to more active treatment. Yellow, cheesy-looking material was dug out, leaving an ulcer, which was dressed with sulphate of copper. In about ten days or so recovery was established.

1882.—In response to Mr. Fleming's appeal, which I have mentioned above, Mr. James, of Thornbury, Gloucestershire, sent the tongue of a steer, one of five affected with the so-called Tubercular Stomatitis; the four remaining had been successfully submitted to treatment. The tongue was received in a good state of preservation at the Brown Institution, and a careful examination was made by Dr. Roy and Mr. Garside. They observed a number of small nodules, which at first were mistaken for crystals, but after further examination they found that the nodules had a definite structure, and when examined with a high power, were recognisable as the vegetable parasite which had been described in Germany, and named *Actinomyces*. It then occurred to Mr. Fleming that they were dealing with an affection which had been investigated

by Bollinger, who, under the name *Actinomycosis*, had described a disease which was new to science.

At the request of Mr. Fleming, Mr. James sent him some fresh specimens from a steer and heifer, each about a year and a half old. In the heifer there had been a swelling of the upper lip and nose, and the disease had extended into the nasal chambers, forming a characteristic little mass of tubercles. Treatment had been resisted, the growths increasing so rapidly as almost to fill up the nostrils. The animal was greatly distressed in breathing, throwing up its nose, and snorting and roaring in its efforts to perform respiration; but neither the mouth or the tongue was involved in this case. In the second case, a steer was examined by Mr. James, who discovered that the roof of the mouth was the seat of the malady, the greater part of which he described as abraded. The upper lip and nose were subsequently affected, as in the previous case, though not so seriously. As a result of these observations, Mr. Fleming, in October, 1882, brought the subject before the Southern Counties Veterinary Medical Association. Mr. Fleming described the cases which have just been mentioned, and also gave an account of this disease so far as it had been observed and described by Continental authorities up to that date. This paper, with additions, was subsequently published as a brochure, under the title "Actinomycosis, a New Infectious Disease of Animals and Mankind."

In the part of this communication in which Mr. Fleming quoted from the Continental writers, he enumerated the various morbid conditions which had been recognised as the result of this disease, among which Bollinger mentioned throat boils (*Schlundbeulen*), and this led Mr. Fleming to suggest that, *not improbably, the so-called wens in Lincolnshire and elsewhere in this country were the result of the same affection.* As I have previously stated, Mr. Wetherell had already mentioned that he had found wens associated with the disease of the tongue. At the discussion which took place after the reading of Mr. Fleming's paper, Mr. Stock stated that he had also seen many cases of so-called wens in Lincolnshire, but he failed to see the connection; he had also observed wens in animals' necks with sores in the mouth, and he thought they were two distinct diseases.

Very great credit is unquestionably due to Mr. Fleming for being the first in this country to recognise this disease of the tongue, and for disseminating an account of the researches which had been made abroad in connection with this parasitic affection.

1882-1883.—Indeed, by Mr. Fleming's publication fresh fields of inquiry were opened, and stimulation given to a further study of the disease in this country. It was followed by a paper by Professor Axe, who renewed his previous observations, and published them in the pages of the *Veterinarian;* they were subsequently reprinted as a brochure, entitled "Actinomykosis Bovis." Professor Axe described a number of tongues affected by this malady, which had from time to time been brought to his notice at the Royal Veterinary College. In addition, this publication contains replies received in answer to a series of questions which had been submitted to various practitioners. One of these questions was evidently suggested by Mr. Fleming's supposition as to the nature of wens. It was worded as follows:—

"Have you at any time found it [Actinomycosis of the Tongue] associated with 'wens' or tumours in the throat, or disease of the bones of the face?"

The answers are of interest not only in themselves, but also on account of the district from which they came.

I.—In my experience I have not found it associated with "wens," tumours in the throat, or disease of the bones of the face. *(Mr. James, Thornbury, Gloucestershire.)*

II.—The salivary glands I have seen enlarged, but I have not known it associated with wens. *(Mr. Hammond, Dereham.)*

III.—Never at any time have I found it associated with "wens," etc. I am quite certain they are distinct diseases. In my practice I see 100 cases of "wens" to one of tongue disease; the former I have occasionally seen in connection with disease of the palate and gums. *(Mr. Clark, March.)*

IV.—I have never found the disease associated with wens, tumours, enlarged glands, or diseased bones of the face. *(Mr. Penhale, Barnstaple.)*

V.—I have observed it to occur in a beast with a wen, though not at one and the same time. *(Capt. Russell, Grantham.)*

VI.—I have not found it associated with wens. *(Mr. Barling, Hereford.)*

VII.—It is very rarely associated with wens or tumours. I look upon it as cancer of the tongue and nothing else. *(Mr. Goodall, Melton Mowbray.)*

(To be continued.)

THE VETERINARY SURGEON.*

In a country so devoted to the sports of the field in general, and to hunting in particular, as ours is, the Veterinary Surgeon of the day plays a most important part. His knowledge of horses bred in his district is more extensive than that of any other person. He knows the breeding and growing up of all the colts in his neighbourhood, and to anyone wishing to purchase a horse he is a fund of information and a most desirable acquaintance. In the hunting field, too, he plays a goodly part—his practice lies with the farmers of his district, and he can say a good word in favour of the sport; and many a litter of cubs is saved by the exercise of his word in season—to the farmer's wife or daughter, whose poultry-yard has been visited. Then, too, if he is a keen man—and most of them are—he is a splendid pilot in a run; his journeys about the country have made him acquainted with many a line of gates, many a convenient gap (of eminent service in a long cross-country gallop); and a man often, when pounded by a series of stiff fences, is only too glad to see the broad shoulders and black coat of the Veterinary loom in the distance, for then he knows there's a chance of still being in at the finish, and that, even if thrown out, he's in uncommon good company. Perhaps in no walk of life has the improvement been so great. The changes of the last twenty years, abolishing the old-fashioned farrier and substituting the modern M.R.C.V.S., have almost revolutionised the profession, and, at the same time, vastly improved its status. It may not be uninteresting to give a short history of the profession. The name veterinary is a very old one, derived from the Latin *veterinarius*, which, having at its root the verb *veho* "I carry," was used by many of the old Latin writers to denote a farrier or horse-doctor, or anyone connected with beasts of burden; in modern days the name indicates one professionally attending all animals. The first regular school for the science was built in France early in the 18th century, and in 1791 a like establishment was opened in London, which was the origin of the now well-known Royal Veterinary College, Camden Town. In 1844 the Veterinary Surgeons obtained a Charter constituting them a Corporation, under the title of the Royal College of Veterinary Surgeons, which empowered them to appoint examiners and grant diplomas for practising members; but membership was not compulsory until 1883, when, by an Act of Parliament passed

* This article formed one of a series entitled "Country Sketches" which have been appearing in the *Devon and Exeter Daily Gazette*; it was published on October 28th, and is here reproduced as evidence of the position the country Veterinary occupies inthe estimation of the public in the West of England. It is often instructive and beneficial to see ourselves as others see us.—Ed. *V. J.*

in 1881 (44 and 45 Vic., c. 62), all persons, with the exception of those who had been in practice upwards of five years and applied for exemption within twelve months from the passing of the Act, were prohibited from recovering any fees for services or professional work unless they were registered members of this body, and held the necessary qualifications. This Act practically extinguished the old farrier, who for years had been a factor in agricultural life. Some still linger in outlying districts, but they are fast getting on the shelf, where the stage coachman, the post boy, the village schoolmaster, *et hoc genere*, have long since been driven by the "march of the times." As relics of the past, one cannot let them disappear without a lingering regret. It is true their knowledge of anatomy, of pathology, of physiology, and even of chemistry and drugs was very limited—yet in many instances they were bred up in the mysteries of the art—were accustomed to cattle and horses and their diseases from early youth; had considerable knowledge of the ordinary symptoms of the diseases of animals, and had numerous nostrums and recipes handed down from generation to generation which, though not such as would be recommended by the Professors of the College, had been proved by long experience to be efficacious. They were men who worked hard; were old-fashioned and quaint in their manner; seemed always to be about 50 or 60 years of age; always to have a partiality for a red or magenta woollen muffler —perhaps the work of, and a present from, the wife, or may be the daughter, of the owner of some successful "case;" always to wear a sort of pepper and salt suit of "dittoes," bearing upon them stains and marks of both the weather and their business; always to be clad, as to their legs, with the good old "antigropplers;" always to have the sturdy, long-haired, never-tired sort of cob that now seems almost extinct; always to have the necks of bottles sticking out of their pockets (generally the deep pockets of their waistcoats); always to have a solemn, deliberate, and impressive manner of talking to their friends, and of telling the news, which was very taking and made them welcome visitors at every house on their rounds, and even though they were uncommonly fond of the phleme, had strange notions of bleeding in the toe vein, giving water with tobacco soaked in it as a means of warming up the stomachs of their patients, used oats heated in a frying-pan to raise blisters—yet they had a way of trusting a good deal to "Epsom salts and Nature," and of gaining the confidence of their employers by their attention and services, which many of the younger school would do well to imitate.

The qualified Veterinary Surgeon of the present day has still strong characteristics, and is easily identified at any country fair or horsey gathering. Picture to yourself a young-looking, heavy-weight man, thick set, and broad shouldered—for the Veterinary is, thanks to the goodness of the profession, as the farmer would say of his bullock, "proofey"—as a rule not particularly natty in his dress, his lower extremities, if not clad in the ordinary breeches and box-cloth gaiters, are displayed in tight-fitting trousers generally strapped, leathered, or double-clothed at the wearing portions, but always showing the marks of his long journeys over the country. He has the unmistakable "horsey cut" about him, tempered by his London residence at "The College," the signs of which never leave him. His hat, either slightly lowered over the eyebrows or worn with a sporting tilt at the side, has a very knowing look; the straw in his mouth, or, may be, the quill toothpick; his white or sporting necktie, coupled with his hunting crop in hand—rarely a stick—complete the picture. He is heavy-looking; perhaps one might, if over critical, say a little unshaven, and, perhaps, not too intelligent in appearance. But stay a minute before you form an opinion; think that possibly he has been up all night in the stable with a sick horse or attending a cow, with a long, wet, weary ride home before the sun is up, and before you come to a conclusion see him at his work. Imagine yourself at a fair or busy market, two

men are coming towards him, the buyer and the seller; 'tis a horse deal, subject to "passing the vet. examination," and on his opinion rests the point whether the farmer who is selling a well-bred colt gets his price or not. They tell him the circumstances—he is a man of the world and a wily one—he stands listlessly chewing his straw or toothpick, or, may be, tapping his legs with his whip—he says not a word; he hears all they have to say—he knows full well if "Words are silver, silence if golden." The twinkle in his eye shows he is alive and alert to every chance word that drops. Most likely—particularly if the horse is a good one—he knows more about the horse than either buyer or seller. He knows all about those side bones, which the seller explains are the "marks of a companion horse that he put him by the side of to do some ploughing;" that seam along the flank, which is explained as "being caught by a gate;" that sore at the withers, very like a sit fast, which is explained as "the gall of a badly-fitting saddle"; that ruffing of the hair at the knee; that slight ridge below the hock, "with which the horse was born"; but not a sign nor a word betrays his knowledge.

Now see him by the side of the animal; now note him; the man is changed; all listlessness in appearance is over; every faculty is on the alert. You see at a glance you are dealing with a man well educated in his profession, well up to his work and an enthusiast in it; for whatever the defects and eccentricities of the individual character may be, it is certain that men rarely, if ever, qualify at the Veterinary College without knowing their work and liking it. But our friend is examining the horse; see how he scans her general appearance; a glance is sufficient to tell him whether the purchaser is buying something that will suit him or not; but as to this he is silent, apparently, though he looks otherwise. He is a man of quietness and gentleness; see how gently he goes up to her—there is no shifting, no starting back with him, whatever the looks of the horse may be, he goes gently and firmly up to her—speaking a few soft words and looking steadily at her. The horse seems to know in a minute she's by the side of a friend—how pleased she is as he takes the halter or bridle in his hand and holds it firmly, it is true, but steadily and quietly—in contrast to the former holder who has been "jobbing" and jerking her mouth or head, as the case may be, under the deluded notion that he has been showing off the animal instead of showing off his own stupidity and ignorance. How gently he opens her mouth, though she starts at this unusual action—then how delicately he manipulates the eye, looks at it, then shades it with its hand, then looks at it again, for so sensitive is the horse's eye to light that even in the space of half a minute, if the sight is normal, the "iris" contracts and expands. Now he speaks for the first time; his words are few, but they are straight and to the point. "Walk her up the road," now "Walk her back," now "Trot her up," now "Trot her back." He likes to see her travel both ways, so that any defective action may be seen at once, for he knows that in many cases it does not show in going only one way. "Now trot her quick and look straight in front of you, she can get on without your looking at her," as the man starts looking, as they almost invariably do at the horse's head, and so startling and frightening her from her pace. Now see him again how gently and almost tenderly he feels her legs, now the back tendons of the front legs, now the fetlocks, now the pasterns, and now the coronet of the hoof. Now see how he scans the hocks for any irregularity, handling them as gently as a courtier might the hand of a "Ladye fair of highe degree." All this is a study, but if you look for a diversion, look at the crowd that have gathered round. The sound of a "deal" has a wonderful fascination, and you have a strange collection of "would-be" horsey-looking idlers of the fair or market about you—from the idling groom out of place to the country squire; some, perhaps, taking a slight interest in the details of the proceeding, but most of them

perfectly innocent as to whether the horse is sound or unsound, for although many of them "would rather be charged with immorality than want of horse knowledge," it is strange how little unprofessional men know about the soundness of horses, though they may be accustomed to ride and to drive them all their lives. The bulk of the crowd seem either to be intent at looking at their own boots or staring with open mouths while the vet. goes through his, to them, mysterious proceedings—which, by-the-bye, are not yet finished. He has not yet examined as to wind. To do this he first pinches the throat to make the animal cough, then has her saddled, and takes her for a gallop, and knows by the sound of her breathing whether she is only thick from being taken up from grass or defective. One more step, and then in most ordinary cases his examination is complete. The last stage is generally an examination of her feet for corns, etc., and for this the shoes are taken off and the hoof tried by the smith with pincers, under the "vet.'s" direction. All these operations have, perhaps, taken ten minutes (certainly not twenty), and the "vet.," perhaps, has to give his opinion on a horse he has never seen before, and in the hurrying and the bustle of a crowd.

The best and most correct definition of a sound horse is now considered to be one "that with proper care of him in the stable, and no unnecessary or unreasonable abuse of him when at work, performs the duties he is required to perform, and continues to perform them after proper intervals of rest." Yet, the dicta of the Law Courts does not quite bear it out, nor are they particularly clear, Chief Justice Best, in Best *v.* Osborne, laying it down that "sound" meant "perfect," which certainly would exclude geldings, and would seem to indicate that his lordship's knowledge of horseflesh and the "ills that they are heir to" was limited. Perhaps he was like the late Master of the Rolls, Sir George Jessell, who, in the writer's student days, always had his saddle horse waiting for him outside the Roll Courts. The change from his lordship in the seat of Justice to the "pig skin" used to be described by the irreverent youth of those days as "from the sublime to the ridiculous."

It is true the "vet." has of later years got into the habit of giving a certificate of "practically sound," but when it is considered that he has to examine, in addition to the few points named, for "buck eyes," "capped hocks," "nerving," "quidding," "string halt," "thorough pin," "thrush," "wind suckers," and a thousand and one other diseases and defects, and to guard the purchaser from all the tricks of horse "coping," such as "bishoping," "puffing the glims," "levelling," "gypping," and against all the little petty deceptions of the farmer or seller, some idea may be gathered of the responsibility of the profession and of the necessity there is for a special training and education in it.

Although most of the country Veterinary's work is in connection with horses, yet he has to be familiar with the diseases of cattle, sheep, and animals of every description. As illustrating the universality of their requirements, the writer well remembers a country "vet." being called in to set the broken leg of a valuable horse—broken short off at the arm. The "vet." successfully performed the operation, and the horse lived to become, perhaps, as perfect a Devonshire hunter as could be seen for many a mile. Then, too, in a run, a foxhound, in jumping a gate, fell, having fractured his leg and dislocated a shoulder. The "vet." successfully attended the case, and the hound was able to run the same season and several seasons afterwards with the pack, and ended a sporting life with a pack of otter hounds. The writer well remembers an instance illustrative of the responsibilities of the profession, and, at the same time, the correctness of a veterinary's diagnosis. A young gentleman of wealth and position purchased a showy horse at a price, though a young one, hard into the "century." "Vet." passes him sound, and the transaction is completed. The horse is hunted; comes home dead lame.

Local farrier, called in, declares it to arise from navicular disease. Purchaser writes to the "vet." complaining. "Vet." sees the horse; she's lame—dead lame; "of this there is no probable possible doubt whatever," but where he can't make out. He tests her feet; 'tisn't there. "It's between her fetlock and her knee," is the conclusion; but there is no apparent cause. The purchaser is dissatisfied. Another farrier is called in, who pronounces it "corns." The vet. still adheres to his opinion that it is not in the foot nor the shoulder, as a horsey friend has suggested, and recommends poulticing at the back of the cannon bone; within a short time there's a formation apparent, and eventually the point of a thorn comes out—the cause of all the trouble. The thorn had gone into the leg and had broken off, leaving a short, irritating point embedded in the leg, which, on coming out, relieved the horse from pain. She went sound as a bell for several years afterwards, and then made treble figures at Tattersall's.

Nothing strikes one more forcibly about Veterinaries than, if one may use the term, the "lop-sidedness" of their education. The slightest acquaintance with them shows in a moment how vastly superior their professional education is to their education on general subjects. As a rule, they know the professional work thoroughly; but their knowledge of classics and arts is limited. Their fondness for their work develops an abnormal tendency to use long words of a professional character. The writer remembers one—as able as "the College" has ever turned out—saying of the injuries of a terrier dog, that had closed with a badger, and required attention, "Yes, sir, the exterior tegument of her inferior maxillary is suffering from a severe abrasion," reminding one almost of the old tale of the man driving into a country inn and saying to the confused ostler, "Extricate that quadruped from the vehicle, stabulate him, donate him a sufficient supply of the nutritious element, and then when the Aurora of morn shall rise in the eastern horizon I will reward you with a pecuniary compensation for your amiable hospitality." The "vet." finds the use of these long phrases and words not without effect. They impress the public, and are useful as bringing home to the country people the seriousness of the ailments of their cattle. As illustrative of this the reader may be interested with the following experience:—The scene is in the "vet.'s" surgery; the "vet." is busy with his pestle and mortar, the writer is discussing the never-finished topic, "the horse and the hound," as an old-fashioned, country-looking man appears, clad in his everyday clothes. "Morning, sir. Misses telleth me you've be out to see the cow." "Yes," said the "vet.", "I was out this morning." "Well, sir, what do'ee think's the matter wey'n? her'th a been a roving and a roaring most terrible." "Well," said the "vet.,' "she has been suffering from an acute form of Tympanitis and Colic." "Oh, now, you don't surely say so. I knawed her was brave and bad. What did'ee plaes to say 'twas? Missis said I was sure to bring hom word what was the matter wey'n. Is her lykes to die?" "No," said the "vet."; "you take home this bottle, give her half of it when you come home, and the remainder before you go to bed, and I'll look out and see her tomorrow." He takes the bottle, muttering "Tinpennynites! I knawed her was cruel bad," and is off. The "vet." turns round to the writer, "Do you know what Tympanitis is?" "No," is the reply. "Well, it's stomach ache; but if I'd told that old fool so he would have said, 'That's nort; I shan't go to the expense of a bottle of medicine. I can cure that myself with rubbing her way a pick stave,' and he'd have gone home without the medicine, and probably in the end the cow would have died."

The country Veterinary has much to contend with apart from the non-liberality of his employers. The march of the times has led to farmers themselves becoming acquainted with the uses of some of the patent medicines in ordinary cases, and he is rarely called in at as early a stage as he should be.

The distances, too, that he has to travel necessitate hard work and somewhat irregular living; the faith in the "white witch" as able to cure diseases of cattle, and the removal of the injury occasioned by pigs, sheep, etc., being "overlooked," the belief in "charmed lard" as a specific for wound dressing still lingers in some out-of-the-way places, but, in spite of these drawbacks, the profession offers many advantages—country life, country sport, and country pleasures—and, as professions in the country go, fairly remunerative. It is an honourable profession, in spite of the difficulty some dealers allege they have in getting a horse passed without offering a fee, and one in which any man who works hard and acts honourably can make a competence, but he must always bear in mind the old proverb, which says, "A (veterinary) surgeon must have an eagle's eye, a lady's hand, and a lion's heart," and may be added, last but not least, a "clear head."

SWINE PLAGUE AND HOG CHOLERA.

In the *Annales de l'Institut Pasteur* for September, Selander continues his researches, commenced two years ago, on the infectious diseases of pigs, known under the names of Hog Cholera, Swine Plague, and infectious Pneumo-enteritis. He considers that the above are synonyms for one and the same disease, and he describes the symptoms as those of a kind of hæmorrhagic Septicæmia. The organism, which he previously described, remains alive for several months in a 7.5 per cent. of salt solution. It loses its virulence when successive generations are cultivated in gelatine, but after being passed through a series of rabbits it regains its infective power and becomes fatal to those animals. Similarly, when passed through a series of pigeons, it becomes virulent enough to cause their death, though, as is well known, they are much more resistant than rabbits. The earlier cultivations kill pigeons slowly, the later ones rapidly; and they are then fatal when injected into pigs in the subcutaneous tissue, and very fatal when introduced into a vein. When pigs are fed on the organs of rabbits that have died from the disease they usually die, and on *post-mortem* examination there is found marked ulceration of the intestine with swelling of the mesenteric glands. If the organism is subjected to a temperature of 53° C. for 25 minutes, to 54° C. for 15 minutes, to 55° C. for 6 minutes, to 56° C. for 3 minutes, it will no longer grow on gelatine; but that the bacteria still remain alive is evident from the fact that they are still mortal to rabbits. They are killed, however, at a temperature of 54° C. kept up for 40 minutes, and 57 C. is rapidly fatal. Death, Selander considers, is due to poisoning, as when filtered blood from an affected animal is injected into the vein of a healthy but susceptible animal, the animal dies rapidly, with symptoms of paralysis, which occur in a regular and definite order. When an animal recovers, the poison is apparently excreted by the kidney. The poison is not destroyed at 58° C., but it loses its power at 100° C., and retains only part of it at 60° C.; it is not an alkaloid, but a toxic albumen, which has a cumulative action. In some experiments on protective inoculation, Selander found that if he heated a virulent fluid for one hour at 57° C., it protected against the action of virulent blood cultures of the organism, and, in those cases in which he failed in absolutely protecting the animal, the duration of the course of the disease was often considerably increased. A dose of the actual poison injected into the veins was still lethal, although the bacteria could no longer produce the disease. He never succeeded in rendering either pigeons or pigs refractory. The organism is always more virulent when grown in living animals than as a saprophyte, even when growing on blood serum; but in the saprophytic stage, although not so deadly to animals, it resists a higher temperature than it does in the parasitic phase.

THE CENTENARY OF THE BERLIN VETERINARY UNIVERSITY.

THE following account of the manner in which the centenary of the Berlin Veterinary University was celebrated is from the pen of one of the representatives of the French Veterinary Schools (presumably Professor Arloing), and it is extremely gratifying to learn that France in this celebration had the good sense to send her most distinguished veterinary surgeons to give it greater weight, and, still more, that they were so well received. For it should be remembered that Germany did not condescend to be represented by a single individual at the International Veterinary Congress held in Paris last year.

The hundredth year of its foundation was celebrated by this high school on July 30th. On the previous evening the statue to Professor Gerlach was inaugurated in the Court of Honour.

The French veterinary schools, which had been officially invited to assist in celebrating the centenary, were represented by Dr. Chauveau, Inspector-General of these schools, by Professor Arloing, Director of the Lyons School, and Professor Nocard, of the Alfort School.

The ceremony of the centenary commenced at midday, in the large assembly hall in the University, under the presidency of the Minister of Agriculture, Lucius von Ballhausen, with all the pomp customary at German university fetes. The chair, where the orators successively addressed the assembly, was surrounded by a delegation of students in costumes bearing the insignia of the different associations to which they belonged. The usual discourse was delivered by Dr. Schütz, Rector of the University, and following him came the Minister of Agriculture; a general, delegated by the Minister for War; the President of the Academy of Sciences; the Rector of Berlin University, Professor Virchow, in the Name of the Faculty of Medicine; the Directors of the Superior Technical School and of the Superior School of Agriculture, and the Municipality of Berlin.

Delegates from the Danish, French, Austrian, Russian, and Swiss veterinary schools next spoke, and then came those of the Dresden, Munich, Stuttgart, and Giessen veterinary schools. Afterwards, representatives of veterinary practitioners of the different German states, then of those of Prussia, spoke—the long series of speeches being closed by the President of the Association of Veterinary Students.

Nearly all the delegates deposited in the hands of Dr. Schutz printed or richly ornamented addresses, which were arranged at the end of the ceremony on a table at the foot of the tribune, on which were also placed vases sent by the Japanese Veterinary School at Tokio, and a photographic copy of an authentic portrait of the founder of veterinary teaching, forwarded by the Lyons Veterinary School.

In the evening, nearly all those present at the ceremony attended the superb banquet, at which several toasts were proposed. This, the first day, terminated by a fete given by the students, and known in Germany as the "Fest-Kommers."

On the following day, the graduates of the University joined the students, and formed a procession through the town. This was followed by a luncheon. The procession, in which were two in costume and mounted, was a new and original idea to the French visitors. In the evening, the Minister of Agriculture received delegates at the official residence, and the reception was honoured by the presence of the Chancellor of the Empire, General Caprivi.

Such, states the reporter, was the Centenary Fete of the High School of Berlin; and he adds: We left with the impression that veterinary medicine occupies a grand position with our neighbours across the Rhine, and that its efforts to maintain an honourable level among the sciences are appreciated and proclaimed. The Rector of the University declared in his address that,

from that day, the veterinary students of Berlin would be put upon the same footing, and enjoy the same advantages as those of the Berlin University. We also shared the feelings of gratitude evinced by the veterinary surgeons of Germany towards the Berlin School; all felt that they had benefitted by the establishment, and that in honouring it they did honour to themselves. With regard to the representatives of the French Veterinary Schools, they have nothing but praise for the manner in which they were received, and the marked courtesy and respect paid to them at all the meetings by their confreres, and even by the highest officials of Berlin.

THE DISADVANTAGE OF PLAYING TO THE GALLERY.

MUCH amusement and derision were excited at the meeting of Council of the Royal College of Veterinary Surgeons on November 25th, when the subject of a new charter was about to be discussed, by one of the members handing round copies of the following paper. In connection with the recent agitation fostered by a small clique, whose motives are apparent, the document has a particular value at the present moment. Mr. Facing-both-ways is never a trustworthy advocate in any situation, and especially when on the stump, or trying to captivate the plebs or groundlings, who, to use an Hibernicism, occupy the gallery; as there is no telling which is the real and which is the sham face. If we ventured to quote a Latin proverb, we would say *Facilis descensus Averni*, and add, *O tempora! O mores!*

"MR. HUNTING'S OPINIONS OF THE FELLOWSHIP DEGREE AND THE '9TH CLAUSE,'

"Before he became Editor of the *Veterinary Record.*

"With regard to the Fellowship, he thought that members of the profession had no right to grumble at the action of former councils who established the Fellowship in order to raise the status of the profession. The possibility of becoming members of the Council was held out to those who were successful in the examinations.

"He congratulated the members upon having got over the great difficulty concerning the Fellowship; for it would seem that members by their silence had given assent to it, and had given up all this ridiculous assertion about the injustice of the proposition. He did not understand how members could complain of being treated with injustice. When some years ago the Council was instructed to obtain, and did obtain, after a great deal of trouble, a Charter of Incorporation from the Privy Council, containing amongst other things certain clauses relative to the granting of higher diplomas, the profession did it of their own free will, and in the only manner in which it could legally be done, and now they grumbled and talked about injustice. But where was the injustice of their own actions? He could not see it. Again, it seemed to be thought that the only good of this Fellowship was that it gave a higher diploma, and was a sort of reward for scientific and literary attainments. It was nothing of the sort, but simply a sort of test or stimulus to make the members of the profession have a little more interest in scientific and literary matters, and also in professional matters, than they had done. It was common enough to hear members say they were taken by surprise at the time this charter was obtained. That was true, because they did not care one straw who were on the Council, or what the Council did when they got there. Now, if they wanted to be on the Council themselves they must take a little interest in the matter and pass the Fellowship degree; it was

because they had to take a little trouble in getting the Fellowship that all this row was kicked up.

"It was only occasionally that a man had the impertinence to speak disrespectfully of the Fellowship examination. He used the word impertinence, because in doing so they must speak disrespectfully also of the Examiners, and he challenged any man in the room to find any three gentlemen whom they had less right to speak ill of than their present Examiners.

"Though gentlemen were not so impertinent as to speak disparagingly of the Examiners by name, by saying the examination was not a test they insulted the Examiners. It was very well for gentlemen to say they did not go in for the examination on principle, but it was a tremendously high and mighty principle that a man showed when he would not take the trouble to do something which cost him money and trouble. He was inclined to think that they had heard nearly the last of the objections to the Fellowship degree. They had only to pay no earthly attention to what men on the other side had to say.

"There were two ways of getting over the difficulty—one being that the majority of the profession should obtain the Fellowship degree, and the other that the Council should deprive those men who had got it (the fellowship) of their just rights, and break the contract which was entered into with them when the Council wasted their (the Fellows) time and took their money.

"There was a decided contract with the Royal College of Veterinary Surgeons, which they who were Fellows did not intend to give up, simply because they were told they were not as good as other men."

Reviews.

A Compend of Equine Anatomy and Physiology. By W. R. Ballou, M.D. (Edinburgh: Y. J. Pentland, 1890.)

This is, it may be presumed, a reprint in this country of a book produced in the United States, and it is a new feature in veterinary literature, being what might fitly be designated a "cram book" for students. The author, indeed, tells us as much in his preface. He says: "From a considerable experience as a quiz-master (!) of medical students and a teacher of anatomy, the writer has seen the benefits of these (compends), and has endeavoured to supply for students of veterinary anatomy and physiology a work which would answer their needs, not only as a text-book, but also for work in the dissecting room." The anatomy of the horse is condensed into 171 small pages, and its physiology into 32—condensation surely could no farther go. The anatomy, with the twenty illustrative figures, is from the English translation of Chauveau's standard work, while the physiology is from treatises by various authors. Students who wish to be reminded of the more salient facts in these subjects will find the little book useful; but we fail to see how it can be made available as a text-book or as a dissecting room manual where anatomy and physiology are properly studied; and the necessity for these important sections of veterinary medicine being thoroughly studied is recognised by all who know the requirements of nowadays.

ZEITSCHRIFT FUR FLEISCH UND MILCHHYGIENE.

Continental veterinarians have ever been foremost in the development of hygiene with regard to the domestic animals, and the relation of these to mankind, in so far at least as their products are concerned, and many excellent treatises on the subject of meat and milk inspection have been written by them; while their services have been made available in this direction all over Europe. It is not surprising, therefore, to find that a journal exclusively devoted to flesh and milk hygiene should find a place in medical periodical literature. The first number of this monthly periodical, issued in Berlin in October, is now before us, and in every respect it gives promise of great usefulness.

It is edited by Dr. Ostertag, veterinarian to the city of Berlin, and contains articles of much importance to the veterinary and medical professions. Among these are two by the editor—on a new strongylus in the stomach of ruminants, and on anatomical investigations into bovine Tuberculosis—which deserve special notice, while the minor articles are of much interest. The price is eight shillings annually, and the publisher is Enslin, Berlin.

THE VETERINARY SURGEON'S DIARY AND NOTE-BOOK FOR 1891.

THE AGRICULTURISTS' POCKET-BOOK AND DIARY FOR 1891. (London: Bailliere, Tindall and Cox.)

These two diaries have reached their second year, and good as they were this year, for 1891 they are still better. Mr. Bennett has made them as nearly complete as it is possible to have them; and it is scarcely too much to say that they are altogether essential to those for whom they are prepared. To the veterinary practitioner and student the first-mentioned diary will be found to contain an amazing amount of information in a very small space, and readily accessible.

Proceedings of the Royal College of Veterinary Surgeons and Veterinary Medical Societies, etc.

ROYAL COLLEGE OF VETERINARY SURGEONS.

AT the special meeting of Council held on the 25th November, it was resolved that a sum of £250 be allowed as a first instalment, to test the value of Dr. Koch's treatment for Tuberculosis, with reference to its applicability to animals affected with that malady. It was also decided that a new charter should be applied for, in order to improve the position of the profession. A full report of the proceedings will be published in the Journal for January.

THE WESTERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE half-yearly meeting of the above Association was held at Chubb's Hotel, Plymouth, on October 27th, the President, Mr. S. Burton, of Torquay occupying the chair. There were also present Messrs. H. W. Thomas, Plymouth; T. Olver, Truro (Vice-presidents); Dr. Honey, Messrs. J. Squire, H. W. Bloye, A. H. Oliver, P. G. Bond, Plymouth; J. H. Penhale, W. Ascott, Bideford; F. E. Place, Exmouth; T. T. Harvey, St. Columb; and the Hon. Sec.

Letters and telegrams, regretting inability to attend the meeting, were received from Professor Penberthy, Messrs. J. A. Collings, R. E. L. Penhale, J. P. Heath, R. Pethick, and H. P. Chase.

The minutes of the last meeting were read and confirmed. Mr. Place, Exmouth, and Mr. James, Colyton, were unanimously elected members of the Association. Mr. THOMAS raised a short discussion on abortion in cows, in consequence of a letter which that day appeared in the *Western Morning News*. It was the universal opinion of those present, that the keeping of goats and donkeys with the affected cows in no way stayed the disease, and that it generally arose from one of three conditions: an unexplained condition of the bull, diseased grasses, and contagion.

The PRESIDENT then called on Mr. J. H. Penhale, of Bideford, to read his paper on

SOME FORMS OF ADMINISTERING ANÆSTHETICS TO THE LOWER ANIMALS.

MR. PRESIDENT AND GENTLEMEN,—In the short paper which I have the honour of reading before you it is my intention to treat this subject from a practical point of view, speaking of facts that have fallen under my personal observation, and describing the methods of administration rather than to enter into the history of anæsthetics, and deal with their therapeutic action, of which I can tell you nothing that you do not already know better than myself.

The great increase of late years in the use of anæsthetics on the lower animals I attribute to three chief causes:

First, a growing recognition of the fact that it is our duty as veterinary surgeons to avoid causing unnecessary pain in the lower animals, not only from considerations of humanity, but because we know that pain exhausts the patient, retarding, and even in some cases preventing, recovery.

Secondly, the use of anæsthetics greatly increases the safety of the operator and the attendants, which, you will agree with me, is a matter of no small consideration.

Thirdly, it enables us to perform operations much more neatly and expeditiously than when the subject is conscious.

Many objections are raised to the use of anæsthetics. We are told that they are expensive, that they are dangerous to administer, that they cause more nervous irritability than would arise from the pain of the operation, and that they prevent wounds from healing so rapidly as they otherwise would.

Personal experience teaches me to look upon these objections as groundless. I have never found that there is any danger where ordinary precautions are observed, and so far from any bad effect following upon anæsthesia, I find that all the animals I have chloroformed recover very rapidly (none taking over five or ten minutes), and do not show any nausea or nervous irritability. I have never found that anæsthesia prevents wounds from healing, and in a castration and firing they do far better than without it, with the further advantage that in firing there is not nearly so much liability to blemish. I should meet the objections as to expense by pointing out that under the new method of administering with the Carlisle bag, we require only half the quantity of chloroform formerly used under the old method of sponge and towel. Further, we now almost exclusively use methylated, instead of rectified chloroform, at one half the expense.

We will now proceed to consider the different kinds of anæsthesia and the methods of administration.

We have three kinds of anæsthesia: total, partial, and local.

Total Anæsthesia (Chloroform).—For total anæsthesia I prefer chloroform, and of this I shall chiefly speak, as my experience has been almost entirely of its use. Before speaking of its action I will describe my mode of

administering. I invariably cast my patient if it is a large animal. I never attempt to administer without casting, and for this reason: At first you have a period of excitement, especially in the case of the horse, which fights a great deal, and is not only likely to injure himself, but the attendants. Moreover, there is a probability of further danger to the animal in falling to the ground while going under influence, as I have noticed that in rising before complete recovery it sometimes spreads its legs in such a manner that unless the muscles were relaxed it would undoubtedly sprain them. After having cast the animal and secured it I put on the Carlisle bag, this being the best in my opinion, because it asphyxiates as well as anæsthises, and has the advantage of getting the patient under very quickly with a small amount of chloroform, the horse taking little longer than from two to five minutes, as compared with fifteen to twenty under the old, method of the nose-bag, sponge, and towel, which allowed a quantity of air to be mixed with the chloroform, producing nausea and depression, which lasted for hours, and sometimes even days. This you never get with the method I advise. I find in the lower animals that you can give almost pure chloroform; indeed, I exclude all the air I possibly can, as I disagree entirely with the old theory that you can only give chloroform at five per cent. solution with air. I must not omit to mention another great advantage of the Carlisle bag. I have found that it enables me to dispense with assistants, and administer chloroform and perform the operation alone.

I shall not dwell upon the action of chloroform—you all know how it acts, more particularly on the heart and on the muscles of the respiratory organs, and that its influence extends from the periphery to the centre, and from the hind extremities forwards. So I shall at once give you the doses that I have found necessary for the various animals I have chloroformed, and the length of time it takes to get them completely under influence.

Horse.—I find that old horses require a larger dose than young ones, and underbred more than well-bred. For actual cautery (firing) more chloroform is needed than for the knife, or even castration. The influence is much more rapid when the head is placed on a higher level than the body. With the Carlisle bag, the horse requires two ounces if over three years old, and *f* ʒjss in the case of yearlings. The time is from two to five minutes, or rather longer in the case of old animals; if they do not go off in five minutes I add *f* ivʒ. more.

Cow.—The cow takes just the same dose as the horse, and is about five minutes in going under.

Pig.—I use this bag for the pig (demonstrated own bag). Dose *f* ʒ2 to ʒ4, according to size.

More air is required for the pig than for any other animal that I have chloroformed. Time three minutes.

Dog.—For the dog I find this bag, which acts as a muzzle as well, much better than the kerchief and cotton-wool.

Dose	..	..	..	..	..	2	to	4 drams.
Time	..	..	..	..	..	5	to	10 minutes.

Cat.—In chloroforming the cat I place it under a bell-glass with a sponge sprinkled with two drams of chloroform; it will go under in about ten minutes. I think the reason that a cat takes longer to go under than other animals, is that asphyxia does not occur so quickly by this method as the muzzle, which we cannot use in the case of the cat.

Fowls.—My method of chloroforming fowls, is to saturate a small piece of cotton wool with ʒom of chloroform, and place it on the beak just in front of the nostrils. The time I find is to be about two minutes. I always chloroform when caponing. (Chloroform kept up long time.)

Total Anæsthesia (Ether).—I have only used ether once or twice, and

have found that it was slower and less complete in its action than chloroform, and that the dose required was two or three times larger.

Professor Vachetta says that ether is less dangerous than chloroform for dogs. This is probable, as the majority of dogs suffer from heart disease, and by the use of ether, which acts as a stimulant, you avoid the danger of paralysis of the heart, which is liable to be produced by chloroform. Yet I have nearly always used chloroform, as I find it more expeditious than ether, and have never had a death from its use. In two cases I have partially anæsthised a dog with ether, and afterwards used chloroform. I think this to be a safe method where there is a weak heart, as the ether acts as a stimulant to the heart, and complete anæsthesia may then be produced by chloroform without much danger.

A. E. C.—Another anæsthetic sometimes used in the human subject is composed of one part of alcohol, two of chloroform, and three of ether. I have had no experience of its use, but I do not believe it to be so safe as pure chloroform in cases where you have a weak heart.

Chloral Hydrate.—I cannot speak from experience of the action of chloral hydrate. It is largely used by Continental practitioners. Professor Nocard, in the Transactions of the National Veterinary Congress of 1886, says that for years he has used no other general anæsthetic but chloral hydrate in a solution of one to three of water as an intravenous injection, the dose being

For the horse, 155 grs. for every 220 lbs. weight of the animal.
For the ox, 120 " "
For the dog, 45 to 90 grs., according to size.

His method of administering to larger animals is to inject into the jugular vein without incising the skin. In the dog he lays bare the external femoral vein, and punctures it either with a trocar or hollow needle. In from 500 to 600 injections he has had no deaths occur ; the sleep is calm and anæsthesia complete.

The time necessary to produce insensibility to pain with chloral hydrate when injected is from five to eight minutes.

We now come to the consideration of those operations in which I have found total anæsthesia of great value.

By means of it castration can be performed very expeditiously, as the animal does not struggle. I have often completed the operation within ten minutes, including the time of administration.

Firing can be done far more neatly than without it, and the painful operation of neurotomy can be more easily performed. In obstetric operations it is invaluable where abdominal muscular contractions are so great as to interfere with manipulation, especially in presentations that are breech, or with head and shoulders back.

You all know, gentlemen, what a difficult thing it is to push back the fœtus when the contractions are in full vigour, but with chloroform it becomes quite easy. The same applies to Prolapsus uteri.

Another great advantage of anæsthesia in obstetrics is the prevention of the violent uterine contractions, which are liable to cause rupture of the uterus, also that it lessens by one-tenth the exhaustion of the mother, rendering recovery more rapid. I have never found it to occasion hemorrhage. Less chloroform is required to anæsthise a pregnant animal, as the pressure of the fœtus in the uterus on the lungs has already produced partial asphyxia.

I cannot describe the symptoms of death from anæsthesia from my own experience, as I have never had a patient that has failed to recover within a very short period after the removal of the bag or sponge, so I shall confine myself to quoting Finlay Dun :—

"Danger," he says, "is to be anticipated whenever the breathing becomes

slow, shallow, or noisy, the pulse slow, weak, or suddenly irregular, the pupils dilated, the conjunctiva, if touched, provoking no reflex action. With such warnings artificial respiration must instantly be resorted to, great care being used to prevent any rough handling, which might entirely paralyse the weakened heart. Cold water should be thrown over the head and neck; care should be taken to secure fresh air, and the tongue should be drawn forward, lest it interfere with inspiration. The galvanic current applied over the phrenic nerve has been advised, but if used at all it must be with the greatest caution."

To these methods of resuscitation I should add inhalations of ammonia and hypodermic injections of alcohol. In large animals I should also, if possible, get the head on a lower level than the body, and in small animals I should invert the body.

Partial Anæsthesia.—Partial anæsthesia may be produced per rectum by means of Arnold's tube. I have never used one of these instruments myself, but I am indebted to Messrs. Arnold and Sons for the loan of one for exhibition at this meeting; they have also been most kind in supplying me with other specimens.

* "The apparatus consists of a glass tube, india-rubber tubing, and canula of ivory. The glass tube is filled with ether, and the canula introduced into the rectum. The tube containing the ether is then plunged into a vessel filled with about a litre of boiling water, which quickly causes it to volatilise and to penetrate into the intestine in the form of vapour. At the expiration of two or three minutes the odour of the ether is perceived both at the nose and mouth of the animal operated upon. The glass tube can be charged as many times as may be found necessary.

"The operation can be performed with the patient standing, which is a great advantage when foals have to be dealt with, for in their case it is often a matter of considerable difficulty to adjust the hobbles before casting, but etherisation once established renders the colt innocuous to handling.

"This tube can be employed with advantage for castration in the pig."

Partial anæsthesia is very valuable in parturition, especially in mares which struggle so violently; it keeps them quiet, and still allows the uterine contraction to continue. Barnes, in his lectures on obstetric operations, says that choral hydrate is especially useful in the first stage of labour, as it produces insensibility to pain without stopping utrine contractions.

Local Anæsthesia.—Local anæsthesia may be produced by means of the ether spray, of cold water, snow, or ice, or else of subcutaneous injections of chloroform, chloral hydrate, or cocaine.

The ether spray I consider the best for firing, but I do not think it very satisfactory in castration or neurotomy, as the wounds heal badly.

I have used cocaine largely, and my experience is that it is very valuable as a local anæsthetic, for operations on mucous membranes, but not on any other parts of the body; it is of little use, for instance, in firing or removing tumours from the skin and connective tissues.

I have found a four per cent. solution applied with a brush on the cornea, very useful in removing foreign substances from the eye, especially in cattle. In one operation on a dog I injected the solution near the corner of the eye, dropped some on the cornea, and waited from about three to four minutes before removing the membrana nectitans, which I performed without apparently causing any pain.

Tabloids are the best form of cocaine, as it does not remain good in solution for more than from twenty-four to forty-eight hours. These pellets contain one grain, and to form a ten per cent. solution one pellet must be

* Extract from VETERINARY JOURNAL, *July*, 1886.

used for every ten minims of injection required, for a four per cent. solution as an anæsthetic for the eye each pellet would obviously require twenty-five minims. It is recommended in firing to use a twenty per cent. solution, ten minims being injected in six or eight places.

I have dwelt at greatest length on the subject of total anæsthesia by chloroform, for the reason that I consider it safer and more generally useful than either partial or local anæsthesia, except in two classes of operations.

In obstetrics, partial anæsthesia is invaluable except in extreme cases, when it is necessary to completely anæsthize and use instruments.

In operations on the eye, local anæsthesia with cocaine is preferable.

The use of anæsthetics, which at first excited a great deal of prejudice, is daily growing in favour with the public. Since employing them in my practice, my clients, as a rule, do not care for me to perform any major operations without them.

I am conscious, gentlemen, that I have offered you nothing new in this paper, but my object has been to invite discussion, and to elicit rather than impart information on a subject which I believe to be of the first importance in our profession, as advantageous both to ourselves and to our patients.

Mr. PENHALE then demonstrated several forms of inhalers for producing anæsthesia, some kindly lent by Messrs. Arnold and Sons; two of the essayist's own invention for the pig and dog were viewed with great interest; in each there was a clever contrivance for supplying air and more chloroform when necessary.

The PRESIDENT said he was very pleased and interested with what he had heard; his experience of chloroform on horses was very limited, but he had experimented, in the company of a medical man, a good deal on dogs and cats. Their method was to put the animals under a bell glass with the evaporating chloroform, and they found if there was a fair admission of air also, the animals became unconscious much more readily. He regarded cocaine as most valuable for the removal of tumours, especially at the elbow, and mammary tumours on bitches; he injected twelve to fifteen minims of five per cent. solution near the seat of operation. In administering chloroform, great care had to be taken not to allow it to touch mucous surfaces, as it caused a violent burning pain and much struggling. He was very glad to welcome a member of the sister profession, and should be glad to hear any remarks Dr. Honey might be inclined to make.

Dr. HONEY said it had given him a great deal of pleasure to listen to the paper, and he was very much obliged for the kind way in which the Association had received him as a visitor; he hoped and believed the day was not far distant where the two sister professions would go hand-in-hand together. A short time since he assisted his friend, Mr. Oliver, in chloroforming a pony, which they succeeded in doing in three or four minutes with a piece of cloth and about two ounces of chloroform; he rather advocated this simple method; he did not quite believe in the complicated inhalers he saw before him. Mucous surfaces should be protected by vaseline, from the irritating effects of the contact of chloroform. He should like to know if any of the members present had seen any effect on the minds of the lower animals from the use of cocaine.

The PRESIDENT replied that he had seen no ill effect of any kind on the lower animals from the use of cocaine.

Mr. OLVER greatly advocated the use of chloroform for all operations of any consequence. For castrating, nothing could be easier or more satisfactory than chloroform and the ecraseur.

Mr. SQUIRE did not regard the ecraseur as a safe instrument for castration, the spermatic artery was sometimes torn in such a manner that considerable hæmorrhage supervened; he much preferred the actual cautery.

Mr. ASCOTT said he found no difficulty or danger in producing anæsthesia with the Carlisle inhaler. It was a great boon to the operator to have the patient insensible to pain, and lying perfectly still during delicate and important operations. His method of castration was by torsion, which was so rapidly done, that he did not deem it necessary to administer chloroform.

Mr. J. H. PENHALE said, in answer to Mr. Harvey, that if the side-line was properly adjusted around the neck, there was no objection to this plan of casting for the administration of chloroform. There was so little danger in its use that he rarely, or never, asked the owners' consent.

Mr. J. H. Penhale was accorded a very hearty vote of thanks for his paper.

A vote of thanks was also given to Messrs. Arnold and Sons for the loan of some instruments for exhibition.

Mr. BURTON gave notice that at the next meeting he would move an alteration in Rule 9, as far as it relates to time of holding annual meeting.

The PRESIDENT then entertained those present to an excellent dinner, and a most enjoyable evening was spent.

WILLIAM PENHALE, *Hon. Sec.*

LINCOLNSHIRE VETERINARY MEDICAL ASSOCIATION.

A MEETING of the Association called by circular by Mr. Jas. Smith, Hon Sec., of Huntingdon, was held at the Albion Hotel, Lincoln, on October 16th. The President. F. L. Gooch, Esq., F.R.C.V.S., was announced to take the chair, but in his unavoidable absence T. Smith, Esq., (Market Rasen) Vice-President, was elected to the position.

There were present:—Messrs. J. M. Axe, Doncaster; W. B. Dickinson, Vice-President, Boston; C. Hartley, Lincoln; R. Mackinder, Peterboro; T. J. Marriott, Bottesford; G. Osborne, Fulstow; T. A. Rudkin, Grantham; and the Secretary.

The minutes having been taken as read, letters and telegrams of apology for non-attendance were read by the Secretary from Mr. Brooks, Professors Williams, Pritchard, and Axe; Messrs. Gooch, Wragg, Greaves, Capt. Russell, etc.

The SECRETARY said he had received the following letter:—

"Central Veterinary Medical Society.

"*22nd June*, 1890.

"DEAR SIR,—At the Ordinary General Meeting of this Society, held on the 5th inst. Mr. Wm. Hunting read his paper "A New Charter, is it Needed?" a copy of which I have the pleasure to enclose.

"Later in the evening it was agreed 'That the Central Veterinary Medical Society, with a view to learn definitely the opinion of the profession respecting the desirability of obtaining a new charter, requests the Secretary to place himself in communication with all our Veterinary Medical Associations in order that the question may be fully discussed at their meetings, and the views of their members obtained.' I have therefore to ask that you will be so good as to bring this matter to the notice of your Association,

"And am, dear Sir, yours truly,

"J. Smith, Esq., M.R.C.V.S., "SIDNEY VILLAR, *Hon. Sec.*
Hon. Sec., Lincolnshire V.M.S."

Mr. W. B. DICKENSON said he was of opinion that a new charter was needed. They had empirics on all sides, and in his neighbourhood there was one man who had been to College and failed in his examination, and he was well known amongst the grooms, and frequented the publichouses and tipped the stablemen and grooms, and that meant an anxiety to get work, and they (Veterinary Surgeons) suffered by it. Another man who had never been

to College had done the same thing, and there was no doubt that members of the profession would suffer in the long run. He thought a new charter was needed.

Mr Axe said he thought it nothing but right they should support this, as members of the Lincolnshire V.M.A. As Mr. Dickinson said, there were empirics all round them who were not even registered practitioners, who were soliciting and feeing grooms, and getting in the thin end of the wedge somehow. A new charter was really needed, and though it did not matter so much to practitioners of thirty or forty years' standing, the younger ones would have to fight these men, and they wanted protection and they had no protection in the country.

The Chairman quite agreed with the proposal as to this new charter, and thought they should put it in some definite form and support Mr. Hunting in this matter.

On the motion of Mr. Jas. Smith, seconded by Mr. Marriott, the following resolution was adopted unanimously:—"That in the opinion of the Lincolnshire V.M.A., a new charter is urgently needed for the profession, and this Association pledges itself to support any proposition from the Central Society to that effect."

Mr. Marriott asked how a new charter would affect blacksmiths who docked and dressed wounds. Mr. Axe said they docked scores in his neighbourhood.

The Chairman said he attended a case the other day that died of tetanus through being docked by one of these men. He suggested the intervention of the S.P.C.A.

Mr. Dickinson quoted a case of palpable neglect through docking, and said an inspector of the S.P.C.A. summoned the man and fined him £3 10s. and costs, altogether £8. That stopped a good many of them. He now did a tremendous lot of docking, where he did but little before.

The following paper by Mr. T. A. Rudkin, M.R.C.V.S., was then read:—

The Examination of Hunters as to Soundness.

Mr. President and Gentlemen,—The examination of hunters as to soundness is in my opinion one of the most important duties we, as Veterinary Surgeon's in a large hunting district, have to undertake, and in bringing it before your notice to-day I feel sure of giving rise to an interesting discussion.

In the first place I think we, or I might say the young members of us, should undertake it so to say as a speciality. Before a man undertakes the examination of a hunter he should first make himself cognisant with the points of one. We are often called in by our friends and clients to assist in the purchase, and in such a capacity we are supposed to know something of his points, etc. The recognising of a good made hunter is to some men quite a gift, while others never seem able to tell the difference between a hunter and a carriage horse. To my mind nothing educates the eye so well as standing on the show ring side observing some of the best made horses of the year from yearlings upwards; enquiring of good hunting men and listening to their various remarks as to shape, symmetry and action. I do not mean to say that show ring attending is all that is necessary to learn the shape of a hunter; but, given a good rudimentary knowledge, I say that there a man has more opportunity of seeing good, bad, and indifferent; and in time is able to pick out the good ones from the worthless crew which usually accompany them.

Now, as to examinations, I do not pretend to be able to write anything fresh. The subject is far too wide for me to go into in detail, and has been written about and discussed by some of the most able veterinarians of the day. I will leave the examination of unbroken horses and will start with

horses four-year old and upwards—horses that are supposed to know something about the work they are intended for. If I were asked to give a definition of a practically sound hunter I should say that he must be perfectly sound in wind, action, and eyesight. My usual method of examination, if possible, is first to see my horse in his stable, watch him for a short time, see if he is pointing his feet, resting any of his legs, weaving, cribbing, or wind sucking; of course these latter defects are included more under the head of vices than unsoundness, but it is our duty to point them out if detected. I then have him brought to the stable door and examine the eyes, which to my mind is one of the most important parts of our examination, and afterwards, if possible, have him taken into a dark stall or box and again examine the eyes by the catoptic test. Being satisfied on this point, I then have the horse brought out, placed on level ground, and have a general look round him. Providing nothing special catches my eye I start examining him on the near side, commencing at the mouth, being particularly careful as to the animal's age, shape of teeth, etc., running my hands over the various glands of the head and neck, examining pulse, jugular vein, and neck. Passing on to shoulders I carefully examine the muscles, and look for injuries. Having had the leg extended forward, I next auscultate the heart.

Standing in front of the horse I examine his knees as to bony or bursal enlargements, and marks of injury. Passing my hand down fore leg, looking for splints, sprained tendons and ligaments, diseased fetlocks, ring-bones, etc., I then examine the fore feet as to malformations and disease. In every case where possible I have the fore shoes removed. With the horse standing perfectly square I stand in front of him and look for malformed hocks, afterwards examining from the side. I run my eyes over the horse's barrel looking for injuries, hernias, etc. Passing on to the hind quarters, I first stand behind my horse, looking for pelvic injuries or abnormalities; then examine stifle, run my hand down the leg to the hock, which to my mind is the most important joint in the hunter, and which gives rise to so many opinions and controversies amongst professional men. It is our duty as Veterinary Surgeons not only to note the various abnormalities, but also the contour and shape of the hock, for although the hock may be perfectly sound as far as disease goes, still there are some shaped hocks that we are bound to note as likely to give way should any serious stress be put upon them. Having examined the posterior part of the leg I run my hand and eye down to the foot taking particular notice of fetlock joints and manner of shoeing. If the horse is shod with cutting shoes I always make a note of it. I then have my horse turned round and, starting at the front part of the off side, examine in the same manner, as I have done the near. This done and provided there are no serious unsoundnesses I have the horse trotted, preferably on hard ground, first very slowly to and fro, then a little faster, taking particular notice of his gait, and manner of turning round. I then have him turned round sharply each way and backed three or four yards. If I feel in doubt as to his soundness in action I have a saddle put on him, and instruct the man to ride him at a slow trot. I get on his back myself, trot him on the hard ground, so that, so to say, you can *feel* if he goes sound.

Now comes the important part of the examination—trying him for his wind—for we all know that if there are serious defects or disease in his wind, not only is his value depreciated, but he is, to a certain extent, rendered worthless in the hunting field. I always endeavour to select a grass or fallow field, or, if neither of these is available, the most quiet and soft place I can get. If he has a decent mouth I always examine in a double reined bridle with curb fairly tight. I first give him a slow canter listening for slight whistling; I then send him along in a good fair gallop and so "open his pipes." I do not believe in bursting a horse when galloping to test his wind, as I consider that

when once fairly galloped you can hear quite as much as if you nearly exhaust him and run the risk of doing the horse a serious injury and bringing yourself into bad repute. As soon as I have had a fair gallop I pull my horse up as quickly as possible and listen if I can hear anything while he is yet breathing quickly but standing still. Setting him going again, I have another slow canter, catch well hold of his head and turn him round sharply to right and left. If there is a hurdle or small fence near the field, and providing the owner is willing, I jump him once to see if he grunts, if not I try him with a stick. Providing he has passed through this ordeal all right, I take him to the stable put him on the pillar chain for say twenty minutes. I then turn his head to the manger, turn him over three or four times Noticing particularly if he turns over sound. I then have him brought back and have a cold show, trotting him up and down on hard ground three or four times.

I have now finished with the horse. The question follows, is he sound or unsound? Will he be likely to stand sound as a hunter? These, gentlemen are sometimes very queer questions to answer, but it is our duty to answer them as far as lays in our power, doing our duty both to our client, our horse, and ourselves. I always like, if possible, to have a personal interview with my client, telling him the horse's deficiencies, and giving my opinion as to whether he is sound as a hunter and likely to remain so. None of us expect to examine a five or six-year old hunter that has been schooled and regularly hunted, and find him without spot or blemish. I do not consider you can make a hard and fast rule as to soundness. We all know that some horses will stand sound for years with diseased joints or other defects, whilst others are just as likely to go unsound from similar diseases. Our great object should be to note all blemishes and unsoundness, and at the same time avoid taking any serious responsibility on ourselves. If we are careful, honest, and straight, we have very little to fear. We get fairly good remuneration for examinations as to soundness, and I say that any Veterinary Surgeon who is guilty of wilful negligence in examination deserves to suffer and pay for his neglect.

Just a word as to writing a certificate. Nearly every man has his own form and way of writing his certificate. I think the great thing is to write it briefly and guardedly; I strongly disapprove of certificates in the form of confidential letters—a way in which some men indulge. Our clients as a rule only want us to examine as to soundness, and not to give our opinion on things not asked for.

Gentlemen, when I proposed to write this paper, I little thought of the wide subject I had undertaken. I hope you will forgive my various deficiencies, and that my feeble effort will give rise to a profitable and interesting discussion.

DISCUSSION.

Mr. AXE said the paper read gave them all the information they should have; they had to go through great difficulties in examining hunters, in putting up with little imperfections. So far as regarded practical soundness the most important thing now was how to word their certificate. They might have a hunter with spavins or injuries on the breast, particularly a horse six or seven years old. The most important thing was the wording of the certificate. Let anything they saw be stated in their certificate, and then if the buyer wished to take the horse let him do so. This is a very delicate point now, writing a certificate, there are so many imperfections. They had to be most careful how they worded it.

Mr HARTLEY congratulated Mr. Rudkin on his practical paper and said his method of procedure so accorded with his own that he hardly knew what to say. There was no doubt they must be very straightforward and honest about it, and if possible give their certificate so that the client knew whether

the animal was sound or unsound, or practically sound. Let it be straight to the point whether the horse was sound or unsound. As the law gave them special fees and protection, so it expected special duties, and if a man abused these, he must be held responsible. The great difficulty to his mind was where to draw the line between staleness and absolute lameness. Also the examination of a horse for wind, let them have a gallop and cool down, and they could find out anything the matter better that way than if they dug their heels in, and got them more or less exhausted.

Mr. DICKINSON said he thought it was well with regard to men finding defects to put it in their certificate, whether they wrote to the client or not. He did not approve of the letter writing, but simply said in the certificate what there was. Say you found so-and-so and you did not commit yourself, and it was fair for the client.

Mr. HARTLEY: But the majority of clients will have a certificate as to soundness.

Mr. DICKINSON: They don't get me. If you examine a horse, you examine him.

Mr. JAS. SMITH said he should like to say that he agreed a great deal with what Mr. Dickinson said. If he examined a horse for a client and found he had so-and-so, but in all other respects the horse was sound, the client then pleases himself whether he takes him or not. He should say that if a horse was a roarer that he was unsound. Also if he had a spavin he was unsound. Sometimes the client wrote and asked their private opinion, and they were bound to give it. Mr. Rudkin had referred, in regard to the conformation of a horse, as to what was likely to give way. There were sickle shaped hocks which were likely to have curbs, and if they have curbs, the Veterinary Surgeon was as liable to the man to whom the horse belonged as he was to the man for passing over unsoundness which did not exist. A client of his bought a horse which in double harness could be heard from one end of the street to the other. The man he bought him of said he knew the horse was sound in his wind, and he went to Boston to see this horse. It was not convenient to put him in double harness, but he had him ridden, and tried him all he knew, and could not make him make a sound, although in double harness he made a big noise. He thought there was a great deal of room for judgment in writing a certificate, and if a man gave a certificate palpably wrong he must suffer for it.

Mr. AXE did not agree with Mr. Smith in saying a horse was sound in all other respects. A year-and-a-half ago he went to Leeds to examine a chestnut mare. She was seven years old, and had a spavin on one hock, but he gave her a tremendous gallop, and jumped her, but the mare was perfectly sound and free from lameness. That mare was hunted a season, and he examined her again, and found her sound, and she stood her work. She had spavin, but she was perfectly sound and free from lameness. There were many such cases which were both practically and legally sound.

Mr. MACKINDER said he was very pleased to be there to hear this discussion, for there was a great deal of difficulty in wording the certificates of animals that were sound, *i.e.*, practically sound, but really not sound. He once knew a case in which an animal was guaranteed not to be lame. The seller knew there was an enlargement on the hock, but the animal was not lame. That was the condition it was sold upon—that it was not to be lame. An action resulted, and when it came before the Judge, he said they all knew what a spavin was; and this man lost his case, although the animal had never been seen lame the Judge ruled against him, and gave the verdict to the buyer.

Mr. HARTLEY: I think a horse with a spavin is unsound.

Mr. DICKINSON said that was his opinion.

Mr. HARTLEY said if a horse had only a bump he was sound.

Mr. DICKINSON thought if they mentioned what they found, the buyer, if a horsey man, would look to himself.

Mr. HARTLEY said these defects were unsoundness, and they could not get out of it by saying "except these things." He should remark that this horse had a bony enlargement on his shin, or had been kicked in the ribs, or other defects, and he would say that these were technically unsoundness, but in his opinion the horse was practically sound.

Mr. DICKINSON thought that was a contradiction in terms.

Mr. HARTLEY said if they had to declare a horse technically sound, it would stop half the horse-trade.

Mr. AXE said the great thing was, for a defect not to interfere with a horse's usefulness.

Mr. DICKINSON said he looked upon letters after certificates as from a frightened man who tried to get out—

Mr. AXE: Yes, as a sort of loophole.

The CHAIRMAN said there was one thing that would not be mentioned, and that was as to the suitability of a horse for a certain gentleman. If they knew a certain horse was not up to a gentleman's weight, they should not let him buy that horse. He might have a big hock, or anything else, and would carry a steady man well, but not another. There was a good deal in studying a man, if they knew the parties. One man might ride a horse for many years, and another might knock him up the first day.

Mr. HARTLEY said he did not see why a Veterinary Surgeon should not buy a horse for his client, and get a special fee for it, and he reminded them that if they rejected a horse which proved to be a sound horse, the seller could sue them.

Mr. J. SMITH said if there was any disease about the hock they could condemn it.

Mr. HARTLEY said there were also peculiarities about breathing which could not be called roaring.

Mr. SMITH thought they could not condemn a horse with sickle hocks.

Mr. DICKINSON said he knew horses with very curby hocks carrying men for four or five years, and they had no summer holiday. When not hunting they went about in a trap. The question was, "What were the best shaped hocks?"

Mr. HARTLEY said a good flat hock with the calcis prominent, not a round hock, but a long hock with the cap of the hock standing well out, was, he thought, the best hock.

Mr. AXE did not like the little, narrow, weak sort of hocks.

Mr. HARTLEY said one of the best tests of the hock was the action of the horse.

Mr. AXE said if they flexed the hocks well it was all right.

Mr. HARTLEY said he should like to ask the essayist if he would unconditionally reject a horse for grunting.

Mr. RUDKIN said if a horse grunted in an ordinary way, he should reject him, even if he did not grunt in the gallop. If he groaned from nervousness he should not reject him.

Mr. HARTLEY said he should reject him if he groaned.

Mr. AXE said he should not, as the soundest horse in England grunted sometimes after three or four fences.

Mr. HARTLEY said he had three or four horses that grunted and one groaned at his fences, but he did not think the others did. They were all sound enough.

Mr. RUDKIN said in many cases, this was simply nervousness, and in some cases was a case of voice.

Mr DICKINSON thought in many cases it was nervousness, and he should be very chary about objecting to a horse because he grunted.

Mr. HARTLEY said he wished to be made perfectly clear about this groaning.

Mr. AXE said they must treat them as men of business.

Mr. FREER said this was a most excellent paper, so far as he had read it, and he only regretted he was not there in time to hear it read. There was one thing which he noticed which was very important. Was a horse sound or unsound, or was he likely to stand sound as a hunter? A horse he saw the other day was perfectly sound, but he was sure it would not stand sound as a hunter. He did not see that Veterinary Surgeons who were asked to examine a horse should be asked to say whether he would stand sound or not. If so it would be a very curious thing to go into a fair and say if a horse was going to stand sound, and stand work. Another thing which he had often noticed was that a horse might be perfectly sound as regards shape and make in his hocks, but he would tread on the point of his toe and bring his foot round. Would they consider that unsoundness, and as regarded trying a horse for wind, it was no use "bucketing" them. He had found in his own experience more horses make a noise after a gentle trot than galloping them three or four miles. He remembered a case that had occurred to him when the owner of a horse would not let him try the animal properly but after a great deal of persuasion he got him on to a bit of sand and found him perfectly sound in his wind. In 99 cases out of a 100, they would discover more from a gentle canter than a hard gallop, and getting him "done."

Mr. RUDKIN in reply said that he had been asked why he had not gone into the technicality of soundness, but was afraid if he had they would have been here all day. As to the legality of the question he referred them to Professor Axe's late paper on the subject, and as to soundness Mr. Banham had written a very exhaustive paper. He thought if they looked at all the little blemishes as unsoundness, they would pass very few. He did not mean to say they should pass a horse with a fishy hock. In giving his certificate he should say a horse was sound in such and such a respect, but not in others. As to the formation of the hocks of course they could not really reject them, but if they had sickle hocks he should name it, and point out that the hocks were of such a shape. As to the bumps, he should call a horse with a bump on the outside of his hock as sound as one with bumps on his shin. He strongly objected to writing letters to clients, and thought they ought to be able to put all they wanted in a certificate. Mr. Freer had asked him if he would pass a horse dragging his toes. They could mention it, but he did not think they would be justified in rejecting a horse because he dragged his toes.

On the proposition of Mr. DICKINSON, seconded by Mr. HARTLEY, a hearty vote of thanks was accorded Mr. RUDKIN for his paper.

New Members.

Messrs. Robert Clark, of Horncastle, and W. R. Davis, of Upwell, Wisbech, were elected members of the Association.

The Dinner.

The members of the Association afterwards dined together at the Albion Hotel.

SCOTTISH METROPOLITAN VETERINARY MEDICAL SOCIETY.

A MEETING of the above Society was held in the London Hotel, St. Andrew Square, Edinburgh, on Wednesday, November 12th. The President, H. Thompson, Esq., M.R.C.V.S., Aspatria, in the chair. There was a good attendance of members and visitors.

The minutes of last meeting were read and confirmed, as were also the minutes of a special meeting held on August 22nd, at which meeting resolutions were adopted protesting against the position of Veterinary Surgeons under the Act as lowering the status of the profession, and imposing upon them duties which were foreign to the nature of their calling; requesting the Board of Agriculture to afford Veterinary Surgeons or inspectors reasonable facilities by *post-mortem* examination for proving the accuracy of their diagnosis before making a declaration; and asking that only in cases of dispute, after consultation with another Veterinary Surgeon, should the lungs be sent to London. The following reply, dated 18th September, was received from Mr. Chaplin's secretary:—"I am directed by the President of the Board of Agriculture to inform you that he is unable to understand in what way the Pleuro-pneumonia Act of 1890 interferes with the status and dignity of a Veterinary Surgeon, and imposes upon him duties which are foreign to the nature of his calling. In reference to the second resolution, I am to point out to you that the Contagious Diseases (Animals) Act of 1878 does not provide for the slaughter of cattle until after the inspector of the local authority has made a declaration, and the local authority have inquired into its correctness. The signing of a declaration is not to be considered an equivalent to proof that the disease actually exists, but it has the very important result of constituting the place where affected animals may be at the time an infected place, and thus prevents the escape of any of the animals which were in contact with it pending further inquiry. The action of the Board does not commence until the inspector's declaration is received. Referring to the third resolution, I am to suggest that as the Board are solely responsible for the administration of the Pleuro-pneumonia Act, and required to pay the costs of compensation and other expenses out of public funds, it is absolutely necessary that they should inquire into the correctness of the declaration through their own Veterinary Officers in the same manner that the local authorities inquire by the aid of their officers, and the most convenient method of carrying this out would appear to be by sending the lungs to London for examination." In the course of conversation, the feeling was general that a great hardship would be inflicted upon Veterinary Surgeons in requiring them to make a declaration merely on suspicion of what the disease was, there being cases in which it was impossible, without a *post-mortem*, to determine whether the disease was Pleuro or Tuberculosis, and it was felt that if there should be no opportunity of testing the accuracy of the diagnosis, the inspector would be placed in a very awkward position if he declared in favour of Pleuro, and an examination of the lungs showed that the disease was Tuberculosis. It was also stated that the recent indignation meeting of the profession had been attended with good results, as it had led to a relaxation of the rules in favour of the veterinary inspector. According to the method now practised, the veterinary inspector, if he suspected an animal of Pleuro, was empowered to arrange for the valuation and slaughter of the animal, the lungs being forwarded to London. The letter of the Minister of Agriculture was ordered to be minuted.

Principal WILLIAMS moved that Mr. Clark, Coupar-Angus—who was, he said, the first student who had passed out of his hands in the Dick College—be elected President for the year.

This was unanimously agreed to.

Mr. Henry Thompson, Aspatria; Mr. Cameron, Berwick-on-Tweed; and Mr. Storie, East Linton, were elected Vice-Presidents; and Mr. R. Rutherford having relinquished the offices of Secretary and Treasurer, because of pressure of work, Mr. Peter Moir, Edinburgh, was appointed his successor.

Mr. GREAVES, F.R.C.V.S., then read the following paper on

REMINISCENCES OF PRACTICAL POLITICS IN THE VETERINARY PROFESSION.

MR. PRESIDENT AND GENTLEMEN,—In the first place I must thank you for the honour you have done me by asking me and giving me the privilege of reading a paper before the members of the Scottish Metropolitan Veterinary Medical Association, it being the second or third time I have had this pleasure.

In taking a cursory view of our profession during the course of the last fifty-six years, of which I have witnessed, we find a remarkable change has passed over it; every step in its onward progress is interesting, and the success is lasting. Whether we consider or compare the status of our profession, follow up our investigation into the scientific aspect of it, or pass in review the advance in the practice of our profession, we shall find much, very much, to interest us and repay us for our trouble—we shall find plenty of material to select from; and in classifying the subjects I intend to lay before you to-day, I shall have to remind you that at the beginning of this period of which I speak, we had no Charter of Incorporation, no Council of the Royal College of Veterinary Surgeons, no Act of Parliament, not the slightest check on any or every form of empiricism in our profession. All this is changed now. I am in a position better than younger men to measure the enormous amount of true, real, substantial progress. We have now a Council elected by voting-papers, and every member of our profession has a vote, and he is applied to and urged to record his vote. This is one of the battles fought and won for you by our party in Council.

We have now four teaching schools, each presided over by able and earnest men. There are a greater number of teachers, a greater number of subjects taught, and taught more profoundly than have ever been taught before, and still we have complaints continually being made of the inefficiency in the extent of practical knowledge possessed by many of the students. Some of them could not cast a horse, pare out a foot, bleed or give a ball, pass a catheter, or tell a lame foot with certainty if life depended on it. When the students appear before the examiners and before the army authorities when applying for admission into the service, this becomes more apparent, and also when they come before the greater examining board—the public. In treating this difficult and delicate question (there are dreamers who think a new Charter is the great desideratum, than which nothing can be more ridiculous), I wish frankly to admit that I exonerate to a great extent (but not wholly by any means) the teachers for this state of things. I also exonerate examiners to a great extent, but not wholly. My long experience in the Council, also with the College and the Court of Examiners has convinced me that there are grave faults existing in the students themselves—some of them in the form of insufficiency of intelligence, in others in a wilful insufficiency of application. Now, the one class we may pity, but the other class we must blame and condemn most seriously. At the present time the Colleges are exercised as to the raising still higher the students' entrance fees to the College. This step may raise a barrier to many poor struggling, but in other respects highly eligible young men, and will create a tendency to securing a select class, possessing ample means irrespective of possessing ability, or, I would rather say, that peculiar talent or natural habit which experience has proved is essential to the making of a clever and eminent Veterinary Surgeon. For myself, I fail to see how this raising the entrance fee can effect a favourable result, even if the present entrance fee be doubled. It is argued that it will enable the Colleges to employ a greater number of teachers, and those of a higher class of men. There may be something in this view of the case; but I hold you may double, nay, treble, your scientific teaching, and still the student be woefully deficient as a clever all-round practical man. In my opinion the principle of the teaching is defective. What is wanted is not more science, or a greater number of science teachers; we

want, in the first place, the weft and warp right, the required degree of intelligence in the student, the proficient education, and then the manual tuition carried out much farther than it is at present, coupled with the present scientific teaching at College.

What I mean is this: that every student who has not served an apprenticeship to a veterinary surgeon before going to College, or been working some years amongst sick and lame horses, should have every opportunity afforded him to become thoroughly conversant with every phase of disease. Do you ask me how I would do this? I answer, let there be at each College a professor appointed with special aptitude, special qualifications, such as patience, intelligence, expertness, and perseverance, to instruct the students in manipulating the horse, the cow, and the dog; he must be clear in his explaining every particular. He should not be, as is the case at present, *stinted to time or inclination*, but should spend at least three or four hours a day, every day, with the students amongst sick and lame horses, *superintending and instructing every student individually* in every duty as to the work of his profession. I urge the importance of giving to work of the hands its due dignity; it is the best teacher.

For instance, show him how to take up a forefoot and a hindfoot of a horse, also of a cow; make him do it over and over again, until he can do it handy and expertly. Make him take off a shoe and pare out a corn, a frog, a seedy toe. Make him understand what weak heels and flat sole mean; make each student do this over and over again under the teacher's eye and instructions; teach him to put himself in ship shape in going about his work. Teach him the different descriptions of pulses, and what this is dependent on; make him perform every operation (in dumb show)—bleeding from the jugular, the vena sepena, the brachial vein, the toe, &c. Teach him to become familiar with every sound in respiration, in health, and in disease, in ausculating, in percussing; make him introduce the male and female catheter; make him perform œsophagotomy, tracheotomy, paracentesis thoracis, neurotomy, lithotomy, castration, puncturing rumen and intestines. Teach him to become familiar with every symptom of Pleurisy, Broncho-pneumonia, Bronchitis, Pneumonia, Fever in its various forms. Show him the pathognomonic symptoms of various lamenesses, hip-lameness, shoulder-lameness, hock-lameness, navicular disease. Show him how to manipulate (make him do it himself), to enable him to form a clearer opinion in occult lameness. Make him administer balls and drinks to horses, cows and dogs, to dress wounds, put on bandages, to cast horses, to fire horses, and a hundred other duties; make him repeat them over and over again—*they cannot be done too often*. I may be told by professors "*We do all this already!*" To this I make reply, "Yes, I know you do, but only in degree." *It wants doing ten times more than it is done.* More time, and more perseverance must be employed on this subject, more importance must be attached to this method of teaching than has been done hitherto. Or all our scientific teaching and increase of entrance fee will not avail to maintain our profession in that high and honourable position it ought to occupy.

Give a man a sound general education with French and Latin. It is not absolutely necessary that a man must possess a scientific mind to enable him to become a clever and eminent Veterinary Surgeon. It is not a fact that the majority of rejections of students are consequent on them being unable to answer some scientific questions of no importance whatever in actual practice. I say, *Let practical proficiency be the crucial test.*" We know it is generally quite true that the most highly scientific men, both teachers and examiners, are faddists.

It is quite true there are some students so dull, and others so idle and careless, that no teacher, however anxious and persevering he may be, can make

them learn. It is the teacher's duty to lead his mind to form a scientific and clear habit of looking at things. I do not say—no one has ever said it—that every student can be made a sharp, bright, and intelligent man; but I do say much, very much, may be done in this direction by a proper and persistent discipline whilst at College. I am satisfied that there is much valuable time wasted during the first and second terms. This initiates habits of idleness, if not worse, and should be specially guarded against—a habit of loafing about, a sort of masherism in demeanour and deportment is engendered. Even those who would fain not be bores, or snobs, or mashers, can scarcely escape the infection, instead of a steady, earnest, thoughtful industry, leading the mind and finding it full occupation in useful and valuable studies. It is the formation of the mind, a faculty to be carefully cultivated; it is the turning-point in his life, and his mind should be led to see the value of being every minute usefully employed.

The degree of natural capacity is a result, and is governed by laws which we did not make and cannot abolish. Culture teaches us to recognise how little we do know, and how much lies, and probably always will lie, beyond the reach of our faculties.

"The Hand that form'd thee in the womb
Guides from the cradle to the tomb."

Veterinary Medical Associations.

I must not omit to bring under notice these most useful and important institutions which have grown up in our midst during the last twenty-five years. These societies are now become numerous, and most beneficial to the advancement of our common profession; nothing that has ever occurred in the history of our profession has been so prolific of good results. Each association is a centre of power and usefulness, and, if conducted in a proper spirit, will continue to wield an influence for good as long as our profession exists—the meeting together of men of large experience, and men of large culture, freely interchanging ideas on scientific and practical matters, such as on bacteriological research, tuberculosis, lymphadenoma, teaching one another the evil of the culpable disregard of the most elementary principles necessary for securing sound and serviceable horses. Even in the vexed question of Pleuro-pneumonia and the method our Government adopts to stamp it out, how much better if it were possible for our profession to work heartily and earnestly with Government in blotting out for ever of this dreadful scourge from our midst! Let simplicity and frankness characterise our conduct; let envy, jealousy, and all uncharitableness be restrained and banished, and then we can say—

"Ye proud, ye selfish, ye severe,
How vain your mask of State!
The good alone have joys sincere,
The good alone are great."

The National Veterinary Association.

This institution has sprung up amongst us. It is an offspring of the above associations. Its objects and tendencies are to increase and diffuse useful veterinary knowledge. It is sustained by some, if not all, of the *elite* of the profession, and is worthy of the best support of our best men.

The National Benevolent and Mutual Defence Society.

This society was formed twenty-five years ago. The necessities of our profession called for it; it has been found of immense service in protecting and defending its members. We have had since its commencement twelve general meetings, thirty-seven meetings of Council, at which upwards of sixty

cases have been discussed, independent of those which have been advised upon and disposed of by members of Council privately. Of the benevolent branch we have assisted many widows and orphans. We have now a fund of nearly £3,000 to help the widows and orphans of the less fortunate members of our Society; and is there, I would ask, any feeling in our nature so gratifying as the consciousness of doing good, and occupying a position of being able and willing to help those left suddenly wholly unprovided for?

"The sweetest voice
That warbles in the grove is not so sweet
As thine, '*Compassion*;' nor the boldest deed
Of hero's arm so worthy of the lyre
As acts of '*Mercy*;' nor in all the round
Of being is there aught in God's pure eye
So bless'd, so bright, so sanctified, as these kind thoughts
That stir the bosom of '*Benevolence.*'"

Our Literature.

During the period I have named the additional works on our profession have been most valuable; the numerous and precious volumes added to our libraries, the fruit of the labours of Dr. Fleming, Professor Williams, Sir Frederick Fitzwygram, and others. In addition to these standard works, we have now not only our old monthly journal, the *Veterinarian*, we have also the excellent VETERINARY JOURNAL, and the weekly *Veterinary Record*, and likewise the *Quarterly Journal of Comparative Pathology and Therapeutics*.

These several matters which I have named, and many other matters which I have omitted, show the value of the work done during the last fifty-six years. We do not now adopt that method of blood-letting and violent blistering to coerce and oust out disease in nearly every case that comes under our care, as was the custom at that time. We have learned the better way. Knowing that nature is ever a wise economist we find it is better to let her lead, we recognising it to be our duty to remove every obstacle out of her way so far as our limited vision reveals to us.

Empiricism is Dead in our Profession.

No one—only Veterinary Surgeons—can treat the ailments of domestic animals and charge for such services; any one else doing so can be proceeded against according to law—thanks to our Act of Parliament, which will ever be associated with the name of that distinguished man, Dr. Fleming; this, in addition to our two Charters and Supplementary Charters, each and all supporting and contributing to advancement of our profession. We are now at full liberty to discuss any and every great question in connection with our profession; for instance, whether it be cruelty or not to dock horses, whether it be cruelty or not to dishorn cattle, or discuss the various phases of Pfeuropneumonia and its prevention. Ay, even—

The Dual Appointment and the Ninth Clause.

The Ninth Clause was inserted in the Supplemental Charter which was granted in the year 1876, and as therein stated, it was "considered expedient that in order more effectually to promote and encourage the study of veterinary medicine and surgery, a new class of members to be called Fellows shall be created." The only object the promoters had in applying for and getting this power was to create an additional incentive to increased study, to found a higher grade, a higher status—in short, to raise the character of our profession to a higher level than it had hitherto occupied. Surely there could be no objection to this. At the time every member was consulted, it was dis-

cussed over and over again, in committee by the Council, every Veterinary Medical Association deliberately discussed it, it was discussed and approved at the Annual Meeting, *and a tacit consent given by the whole profession.* Now, every aspiring and worthy member of our profession can occupy this higher degree if he is so minded. Those Fellows who are partly elected and partly made by examination are composed of some of the most distinguished members of our profession, such as Sir Frederick Fitzwygram, Dr. Fleming, Sir Henry Simpson, and many others—men of unswerving constancy, they are faithful devoted servants of the profession. They alone are eligible to become members of Council or Examiners. Since 1876 every new member entered on these terms, therefore can have no complaint to make. The thought is never thought or breathed that there are not outside the list of Fellows many members equally talented and eligible, and it is our anxious wish that they should aspire to take this higher degree, become Fellows, become members of Council, and, if they are desirous and fully qualified, become Examiners. *Every member of our profession who possesses ordinary ability can become a Fellow if he likes.* But this arrangement a few individuals in our profession find fault with. I do not say that they are actuated by corrupt motives—they are under a strong bias. The men most loud in denouncing it are the men who have done the very least of anyone for the profession; it would seem that they have a pleasure in fomenting discontent. As a rule they are the men who possess the least liberal share of ambition or ability; they get up a factious opposition to serve the political exigencies of the moment; they resort to paltry methods of attacking men who have worked long and hard for the profession; they have a personality instead of a principle—men who would not make an effort or do a hand's turn to advance their profession, and, if elected members of Council to-morrow, could not and would not find in their hearts to spare the time or the money to attend the committee or quarterly meetings of Council. Some of them have a blind hatred to the loyal party of progress. Men of no aspirations would make useless members of Council. We may lament, we may grieve over this, but do not let us fear it, let us make the best, not the worst of it.

The profession has not suffered in the slightest degree through the dual appointment; it is found of immense advantage and convenience to the Council meetings. It is because these men are valuable and useful men that they have been elected to the dual office. They serve the profession well—take my word for it, it will be a loss and a sad day for our profession if it is ever denied the power to utilise men who possess distinguished and special aptitude for these duties; we must always guard ourselves against deciding questions of great breadth upon narrow and isolated grounds. The present members of Council spare neither time, trouble, nor expense if only they can do something to serve some good purpose in the profession they love.

To every member of my profession I would say, if you really have any feelings of ambition and strong desire to see your profession advance and occupy a higher standing, you will seriously consider this matter and become a Fellow, and thus join the party who have struggled, and are still struggling to gain for us all a better position in society. It is this privilege in connection with it—this hope of reward that has been the chief incentive for members to work, to study, to aspire, and to qualify for this higher degree. There is no doubt about it, they improve themselves, they raise themselves in their own estimation, and in the estimation of all who know them. Let the same laudable feeling actuate you who are not yet Fellows; let not a feeling of envy incite you to disparage this degree, and to join those who are now endeavouring to carry a retrogade movement, trying to drag us down again, and trying to discourage every noble aspiration. Men who will do this are enemies to our noble profession. We have difficulties to grapple with and

XUM

prejudices to overcome, but do not let us despair. I hope every member of our profession possessed of an enlightened spirit and every man of proved capacity will esteem the Fellowship degree an addition to his respectability and honourable character, and will pluck up courage to endeavour to obtain it.

The New Charter.

I trust every man of right judgment will say a new Charter is quite unnecessary. It cannot be productive of any real practical benefit or be conducive in any way to the advantage of our profession. I dislike and detest unnecessary and gratuitous changes. A new Charter cannot make clever Veterinary Surgeons; and this is the end and aim of all effort by all men but those who take a pleasure in fomenting discontent. Let us stick to this large consistent principle where a solid base exists. Would not Government laugh at us if we apply again so soon for another Charter before we have had sufficient time to test fully the last one, especially since the result of experience, so far as the present system is concerned, is so eminently satisfactory to the profession in general? Would not Government say, and have good ground for saying it, that we do not know our own minds for five minutes together? I urge you not to attach exaggerated importance to the puerile arguments put forth by some poor useless creatures, but let us go forward towards the consummation of this good work—that of elevating our profession as an honourable, scientific, and useful profession.

In the discussion which followed, and which was taken part in by Professors Williams, senior and junior, Professor Lewis, Mr. Clark, Mr. Cunningham, Mr. Cameron, Mr. Rutherford, the Chairman, Mr. Thompson, and others, the position which Mr. Greaves took up on the 9th clause was that which commanded most attention. And there was an undoubted consensus of opinion that a new Charter was desirable, to alter this clause in the direction of restoring the rights of members of the Royal College of Veterinary Surgeons to sit in the Council, and more especially the right of those who were members at the time the clause came into force.

Mr. GREAVES, in replying to the remarks which had fallen from the various speakers, said it was not the first time he had had to change pre-conceived opinions by coming in contact with and hearing the opinions of his friends of this Society, and he had to admit that he had heard much that day to cause him again to do so. In saying this he was understood to refer to those gentlemen who, passing prior to 1876, have special claims to have this clause altered.

The CHAIRMAN remarked upon the omission from the paper of all reference to the Society for the Prevention of Cruelty to Animals, which was, in many cases, preventing veterinary surgeons from following their profession.

A long and interesting meeting terminated with votes of thanks to Mr. Greaves for so kindly and at so much trouble bringing forward his paper, and to Mr. Thompson, the Chairman, for presiding.

R. RUTHERFORD, F.R.C.V.S., *Hon. Sec.*

ROYAL SCOTTISH VETERINARY MEDICAL SOCIETY.

THE annual meeting of this Society was held in the Dick College Buildings, Edinburgh, on Wednesday afternoon, October 8th, Mr. A. Reid, Auchtermuchty presiding.

Mr. REID was re-elected president for the ensuing year, and the other office bearers were also re-elected.

Principal WALLEY exhibited two lambs infected from an old sheep suffering from Orf, or Mouth-and-Foot disease, which was proved to be highly infectious, and required every precaution to prevent its spread. The Principal

also gave particulars of some cases of Influenza or Pink-eye in horses which he had examined at Newcastle last week. The disease had assumed a most virulent form, and was causing great mortality. The lesions were very similar to those seen in septic poison. He showed the eye of a horse in which blood was thrown out into the interior of the eye. The mortality was, however, confined to one or two studs in Newcastle.

Mr. CAMPBELL, Kirkcudbright, introduced the subject of bone-softening, and illustrated it by specimens from a seven-year-old mare that was bought for 450 guineas. The disease made its appearance much in the fashion of Rheumatism, and ultimately affected the jaws. On a *post-mortem* being made, nearly the whole of the bones of the body were found completely softened. In the same stud a three-year-old stallion, of the value of 300 guineas, became affected, and slipped in the stable and broke its back. Mr. Campbell discovered that the stud groom had been in the habit of administering large doses of calomel, and he attributed the changes in the bones to the injurious effects of that mercurial compound. A short discussion on the subject followed.

THE DINNER.

The members subsequently dined together in the Douglas Hotel, under the presidency of Mr. Reid, when a number of complimentary toasts were proposed.

W. D. FAIRBURN, *Hon. Sec.*

CENTRAL VETERINARY MEDICAL SOCIETY.

THE Annual Dinner of this Society took place at the Holborn Restaurant, London, on November 6th, when about forty Fellows of the Society and friends were present.

Mr. F. G. SAMSON took the chair, and a very enjoyable evening was passed.

Previous to the Social Gathering some routine business was done and the President (Mr. F. G. SAMSON) gave his inaugural address, as follows:—

GENTLEMEN,—I have first to thank you for the honour you have conferred upon me in electing me as President of this, the Central Veterinary Society. I deeply feel the responsibility of the situation and consider it a great compliment; my earnest endeavour shall be to carry out the duties pertaining to this important position to the utmost of my power, and to earn the esteem and good fellowship of those with whom I shall act. At the same time I am not backward in asking the assistance of not only the late president, but also of all the members, as only with your combined energy and devotion can I hope to have a good session and maintain the reputation of the Society, and thus be the means of upholding the profession. Such associations as this vary considerably, having times of general activity and prosperity, and times of depression and laxity; these depend a great deal upon the attendance of the members, therefore I sincerely urge you, one and all, to not only attend regularly, but to be punctual so that the business may be commenced at the stated time, and members may not be kept waiting. We may assist and lessen the duties of our honorary secretary by preparing and bringing forward papers for discussion. I trust the younger members of the profession will come well to the front with papers, for being fresh from their studies their minds are more adapted to perform this than the older, busy practitioner. They may also be the means of teaching the older members something they, in their young days, did not have the opportunity of learning, there being many more branches taught in the schools now than formerly. Some may say they have not time to prepare papers, etc. To those I would say *try*, and if the facts of any of the interesting cases which daily occur in our practices are plainly brought forward they will not fail to bring out the experience of

others and thus promote a good discussion, from which much, both interesting and instructive, may be learned. By a free interchange of opinion we are enabled to help one another.

These societies tend greatly to raise the standard of the profession, also to foster professional etiquette and sociability amongst their members. I am of opinion our profession is not united enough; the more united it becomes the greater benefit we shall all receive. We may with good grace endeavour to increase our numbers by bringing forward for membership any professional brethren who may not already have been enrolled, for the larger the attenance the more the experience and power brought to bear, the better we know one another, and consequently we shall be of greater assistance and instruction to one another.

There is another point I wish to call your attention to, viz., the bringing forward and exhibiting of pathological specimens. These have, I think, been much neglected of late, and I hope this hint will cause you to improve upon that point. The most simple specimens, particularly when the facts and points of interest connected therewith are related, often tend to promote a good and instructive discussion. The most important cases are not the most curious and rare, but the everyday ones—which we are so apt to hastily dispose of because they are familiar. Over haste is too often undeserved. In these discussions I cordially invite one and all to join. That little uncalled for diffidence in rising throw away, and join in the discussion with earnestness and good intent—others are sure to follow, and thus the standard of this, the largest and oldest society, will be kept up. Let me entreat you not to neglect to attend the meetings, but come with the intention of being useful to others, and you will find the advantages of taking part in the proceedings of our meetings are mutual.

There are many points of interest and value to the profession that might be discussed at these meetings, *e.g.*, the late appointments of travelling inspectors under the Board of Agriculture in the new Pleuro-pneumonia Act; in my opinion, if this had been taken up and discussed by ours and other Societies in time, and a deputation forwarded to the proper quarters, the appointments might have been different. I cannot but think myself that those veterinary surgeons at the head of the Board of Agriculture were to blame, for they should have protested against such appointments and shown how much better for the position would have been men with technical and skilled training.

It should be remembered by all that the proceedings of our Societies are now published, and anything that is brought forward is transmitted to a wide circle; therefore it behoves us to labour and endeavour to maintain and uphold the rights of our profession; then the public may see we are advancing, and mean to advance constantly.

Then, again, the doings of the Council might with good grace be discussed at our meetings, for by the combination of our Societies, on any subject of politics relating to the profession, resolutions might be formed and forwarded to the Council which would, I am sure, have their kind attention in the best interests of the profession. Remember the Council of to-day is not what it was a few years ago. Members now receive hundreds of votes where they formerly received about a dozen, therefore the Council is bound now to listen to the united voice of the profession; and these Associations should, in my opinion, be the mouth-piece of the profession.

There are two subjects on which it behoves us all to form a clear opinion at once, and to express it so that it may be heard. No man should be neutral on the subject of Education or on the question of a New Charter. We must let our Council know what we desire.

It has been, I think, correctly affirmed that the progress of a science is in

proportion to the advancement of its literature, whether we regard the latter as the parent or the offspring itself. Our literature has received many valuable additions, and there are many more in hand all of which are of great value to the profession and tend to keep the busy practitioner in touch with the latest scientific discoveries. In the advanced state of an art, the written observations, the voluntary contribution of valuable records by its members, are the never-failing source of an ample supply of information. In the earlier period, or as it may be termed, the boyhood of an art, the supply does not flow so abundantly, hence the labours of those who have undertaken the onerous duties of editor become wonderfully, I may say fearfully, increased.

Agricultural science must ever be considered as intimately connected with veterinary science. Associations, having for their object the improvement of the former, have of late years sprung up in almost every district of this country, and in the published list of members you see the names of many of the most talented men in the kingdom. These Associations must necessarily be attended with beneficial results to our profession, and we are further assured of this by the recognition the Royal and other Agricultural Societies give the Veterinary Profession.

We may honestly congratulate ourselves upon having made great progress, both socially and scientifically, during the last few years, and still there is room for much further advancement, but we are not all endowed with the same gifts, nor have we the same opportunities. As practitioners we all have opportunities of doing some good, and we should embrace them. We owe a great deal to our profession, and we should endeavour to repay a portion of it. If we cannot contribute to the discoveries of science we can add to the general store of clinical experience, and we can all do our best to raise or maintain our professional standard in the eyes of the public by proper attention to our clients and patients, and by giving and demanding courteous treatment between brother practitioners.

Gentlemen, there is another point of interest I wish briefly to call your attention to, viz., the overcrowding of the profession, which causes me to think whatever will become of us all. The competition, more particularly in large towns, is very great; this tends to reduce our fees both in quantity and quality. This reduction is of no benefit in maintaining the professional status, and if it continues what will it be in years to come? The weak will go to the wall and the fittest survive; therefore it behoves all likely to practice as veterinary surgeons to learn their profession thoroughly and be especially trained not only in the theoretical parts, but also in the practical branches of the art. To those who are not, certain failure will be the end.

I now thank you all sincerely for the patient hearing you have accorded me in reading these few remarks which I am afraid have not been very interesting. I trust as the year goes round we shall feel that one and all have learned something through this, the Central Veterinary Society, and I am sure we shall if you will all help.

At its conclusion, Professor PRITCHARD said—Gentlemen, I am sure we have all listened with great satisfaction to the able address of our worthy President, and I think we should be falling short of our duty if we neglected to tend him a hearty vote of thanks for it, for it contains much which would tend to improve the interests of this Society. I therefore hope you will carry a hearty vote of thanks.

Dr. FLEMING said—Gentlemen, I have very much pleasure in seconding Professor Pritchard's proposition. We are all indebted to our President for his address, and we can all feel confident that the interests of the Society are in safe hands.

The vote of thanks was carried with acclamation; and Mr. Samson suitably responded.

SIDNEY VILLAR, *Hon. Sec.*

ROYAL AGRICULTURAL SOCIETY.

At the monthly Council Meeting held on November 5th, Sir JOHN THOROLD reported that in obedience to the instructions given by the Council at their last meeting, circular letters had been addressed to all the members of the Society, asking their co-operation in carrying out the provisions of the Pleuro-pneumonia Act, and also to the Society's provincial Veterinary Surgeons, requesting that immediate notice of any outbreak of the disease coming to their knowledge should be given by telegraph to the Society's offices. The Secretary had submitted a quantity of correspondence which had since been received on the subject, and had reported that particulars of every outbreak notified had been at once forwarded to the Board of Agriculture. The Committee had discussed the question of Foot-rot in sheep, which arose at the last meeting of the Council. Professor Brown having stated that there was great difficulty in getting diseased animals, some of the members of the Committee had offered to obtain two or three sheep virulently affected with the disease, for the purpose of further experiment at the Royal Veterinary College. The Committee recommended that prizes be offered for a horse-shoeing competition at Doncaster, in two classes, limited to the county of York as follows:—

Class 1.—Hunters: £6, £4, £3, £2, £1.
Class 2.—Agricultural Horses: £6, £4, £3, £2, £1.

The Master of the Farriers' Company had expressed the desire of the Company to provide as before the two first prizes, and to award to the winners of these two prizes the freedom of the Company. Mr. Vessey, the Society's provincial Veterinary Surgeon for Dorset, having removed from that county, the Committee recommended that Mr. C. Hedworth Golledge, of Sherborne, be appointed to the vacancy. Professor Brown's pamphlet on "Dentition" being out of print, the Committee recommended that a new edition be prepared, with any revision which the Professor might think necessary.

Professor BROWN had presented the following report:—

Pleuro-pneumonia.—Between September 1st, when the Pleuro-pneumonia Act of 1890 came into force, and November 1st, a period of nine weeks, eighty fresh outbreaks of this disease have occurred in Great Britain. The counties in which these took place were—Chester, Derby, Essex, Hunts, Lancaster, London, Middlesex, Norfolk, Salop, Stafford, Surrey, York (North and West Ridings), in England; and Aberdeen, Edinburgh, Fife, and Forfar, in Scotland. In addition to the cattle slaughtered in the above counties, a number which had been exposed to the risk of infection were slaughtered in the counties of Lincoln and Northampton.

The total number of cattle slaughtered by order of the Board of Agriculture since the Act came into operation has been about 3,250; this includes not only the diseased cattle and those in contact with them, but also some that were suspected, which it was deemed expedient to slaughter. In Ireland there have been twenty-eight outbreaks of Pleuro-pneumonia since the beginning of September, two in the neighbourhood of Drogheda, the remainder in the Dublin district.

Anthrax.—During the thirteen weeks from the beginning of August to October 25th, there have been twenty-eight fresh outbreaks of this disease in England, in the counties of Berks, Cornwall, Derby, Dorset, Kent, Lincoln, Norfolk, Northampton, Notts, Somerset, Stafford, Sussex (East), York (North Riding), and York (West Riding). The number of animals attacked was 177. Of these diseased animals one was killed, 119 died, and twenty-nine recovered. No case of Anthrax was reported in either Wales or Scotland.

Swine Fever.—There were 1,525 fresh outbreaks of this disease reported in Great Britain during the thirteen weeks ended October 25th; 7,498 swine were attacked, 3,336 diseased pigs were killed, 3,264 died, 1,111 recovered, and 434 remained alive at the date when this return was made up.

The Department of Research and Comparative Pathology is now in working order. In the Laboratory, during the past three months, the undernoted subjects have received attention, and most of them are yet under investigation, viz. :—

Milk from tuberculous cows.
Tumours: suspected actinomycosis.
Tumours, cystic.
Tuberculosis in the horse.
Tuberculosis in cattle.
Pyæmic abscesses in cow's liver.
Pleuro-pneumonia; contagious and sceptic.
Anthrax in cows.
Foot-rot in sheep.
A form of tuberculosis in the kangaroo.

Earl CATHCART was exceedingly glad that the Veterinary Committee had taken up the subject of Foot-rot in sheep, with a view of ascertaining its contagious character. The Americans took a very serious view of that troublesome disease; it was one of their scheduled diseases. Only the other day Sir James Paget had made the observation that "the medical practitioner must be a student as long as he lives. He goes on or he goes back." That observation eminently applied to veterinary science.

Mr. PELL, in reference to Pleuro-pneumonia, drew attention to a fact which they had lately ascertained in Northamptonshire, and which he considered ought to be made public. A number of beasts affected with Pleuro-pneumonia were known not to have been in contact with the disease since May 8th last, showing that the disease had been latent in those animals for five months—not even that period being sufficient to render the cattle safe from it.

Army Veterinary Department.

Gazette, October 10th.

YEOMANRY.—Yorkshire Dragoons, Richard Cuthbert Thompson, Gent., to be Veterinary Surgeon. Dated 25th October.

Gazette, November 7th.

Veterinary Surgeon, first class, Walter Burt, from half-pay, is restored to the establishment, vice Veterinary-Surgeon C. H. Betser, deceased. Dated 8th November.

Inspecting Veterinary-Surgeon Clayton has been transferred to Bombay; and Inspecting Veterinary-Surgeon Thomson to Dublin. Veterinary-Surgeons, First-Class, Dibben (from India) and Crawford (from South Africa) having completed their tour of foreign service, have arrived in England. Veterinary-Surgeon, First-Class, Rowe has arrived in England on leave from South Africa.

Again the Indian Government has failed to recognise the claims of the Veterinary Department to a share in the honours bestowed after successful military operations. The Chin-Lushai Expedition rewards have been published, and amongst the names of combatant and medical officers who have been promoted or decorated for meritorious services during that most fatiguing and trying campaign, far beyond the boundary of civilization, that of Mr. Nunn does not appear. This we consider most unfair, as no one could avte worked harder or better deserved recompense. The treatment of e er inary Officers in India is most disheartening and disgraceful.

Obituary.

THE following deaths have been reported:—Edward Leach, M.R.C.V.S., Exeter, who graduated in 1857; and James Baillie, M.R.C.V.S., Cupar (Fife), who graduated in 1863.

Jurisprudence.

CHARGE OF DEPOSITING DISEASED MEAT FOR SALE PURPOSES AT MAIDSTONE.

AT a sitting of the Maidstone Court of Summary Jurisdiction on November 18th, before W. Laurence, Esq., W. Day, Esq., and G. Baker, Esq.,

George Henry Ray, butcher, was summoned upon the information of William Jackling, Inspector of Nuisances for the borough, who alleged that on the 17th October last, upon defendant's premises in Market-avenue, Maidstone, were deposited four quarters and pieces of meat, belonging to him and in his possession, "for the purpose of sale and intended for the food of man," such meat being diseased. Defendant pleaded not guilty.

Mr. D'Eyncourt, barrister, instructed by Messrs. Monckton and Son, appeared to prosecute on behalf of the Local Board of Health, and Mr. H. F. Dickens, instructed by Messrs. Norton and Sons, appeared for the defence.

In opening the case, Mr. D'Eyncourt stated that the prosecution was instituted under the Public Health Act of 1875, the 117th section of which statute directed that in the case of unsound meat having been condemned, the person to whom it belonged, or in whose possession it was found, should be liable to a penalty not exceeding £20, or imprisonment for not more than three months. It was enacted in the previous section that the proof that the meat was not exposed or deposited for the purposes of sale, or was not intended for the food of man, rested with the party charged. The gist of the offence with which defendant was charged was having on his premises, or in preparation for sale, the meat in question; not selling it or even exposing it for sale. He should prove to the Bench that when the meat was found on defendant's premises it was evidently in preparation for sale as human food, for which it was unfit, and was properly condemned.

William Jackling, the Borough Inspector of Nuisances, stated that on the 17th October, in consequence of certain information which he received, he saw Mrs. Shirley, the wife of a cow-keeper in West Borough. He had some conversation with her, in consequence of which he afterwards went to defendant's slaughter-house. He there saw hanging up the head of a beast, also the liver, spleen, diaphragm and lungs, he thought. Upon that he went and saw Mr. Ray at the cattle fair.

Mr. D'Eyncourt—What did you say to him?—I said, "You bought a cow the other day which died of Milk-fever?"

What did defendant say?—He said, "The cow did not;" and I replied, "If she did not die, you killed her to save her life." (Laughter.)

What did defendant say to that?—He made no answer; but with regard to the state of the animal said it was "all right."

Proceeding, witness stated that he asked defendant when it would be convenient that he should see the carcase, which was deposited in his shop in Market-avenue, and was thereupon handed the key of the premises. He proceeded to the shop, where he found hanging up four quarters of beef and other smaller pieces, all properly dressed and ready for Saturday's market.

Mr. D'Eyncourt—Did you notice anything as to the appearance of the meat?—Yes; it struck me as being very dark beneath the skin, and the

inside also presented a very dark appearance. When cut into with a knife the meat was still very dark—very much darker than I should have expected to see the flesh of an animal which had been healthy when alive.

You thought it a case in which you ought to call in a Veterinary Surgeon, and sent for Mr. Crowhurst?—Yes; and he inspected the meat; also the liver, and other parts of the animal that I found in the slaughter-house. Mr. Adams, the Medical Officer of Health, was called in, and the meat was examined in the presence of defendant. We satisfied ourselves that the carcase was unfit for human food, but defendant said, "It was a splendid animal, and it is a shame to have the meat destroyed." Feeling strongly on the matter, he asked me not to remove the meat before it had been inspected by a justice, to which I readily consented so long as I had entire possession of the premises. The ex-Mayor (Mr. Clifford) saw the meat, and afterwards signed an order for its destruction.

Cross-examined—Mr. Ray seemed to feel strongly on the matter, as I have said, and protested that the meat was perfectly good.

At the time you went to the slaughter-house you understood that the cow had died from Milk-fever?—Yes; I was told so.

That, of course, first put you on the alert?—Yes; the circumstances were rather suspicious.

Do you know that Mr. Ray applied to have a sample of the meat sent, on his behalf, to an analyst?—Yes, but that was not permitted.

Did you see the animal alive at all?—No, sir.

Mr. Matthew Algernon Adams, Medical Officer of Health of the borough, stated that on Friday, October 17th, he went to Mr. Ray's premises in Market-avenue, and there, in the presence of Mr. Crowhurst, Mr. Jackling, and the defendant, examined the meat in question, together with certain interior parts.

What was the appearance of the meat?—It was exceedingly dark and somewhat soft.

In your opinion what did this darkness show?—Either that some disease had profoundly affected the blood of the animal, or that it had died a natural death without being bled; at least that it had been in a dying condition when slaughtered.

In your opinion was the flesh in a healthy state?—Undoubtedly not.

And it follows as a corollary, I suppose, that it was unfit for human food?—Yes.

Cross-examined—I had heard that the cow had died of Milk-fever before I had any conversation with Mr. Jackling; therefore, I certainly did see the carcase under the impression the animal had so died.

The mere darkness of meat does not indicate that it is bad, does it?—It indicates that it is unusual.

Take, for instance, the case of a horse which had exercised its muscles very much; would not you expect to find the flesh dark?—I should think not. There is a darkness that is characteristic of health, and a lightness that is characteristic of disease. A healthy darkness would be right and proper; anything less than a healthy darkness would be disease, and anything more than a healthy darkness would also mean disease.

Re-examined—If the blood had circulated properly at the time of death would the flesh have presented this dark appearance?—Certainly not. I certainly think the degree of darkness was sufficient to indicate that the flesh was unfit for food.

Mr. Charles Crowhurst, M.R.C.V.S., stated that he was called in to examine the meat in question on the 17th October. He was immediately struck with the exceedingly dark appearance of the flesh. It looked as if the animal had died without having been bled. The meat looked quite unfit

for food. He had never before seen a case in which the blood was so retained.

In your opinion was the flesh unfit for human food?—Yes, quite.

Was the appearance consistent with the explanation of Mr. Adams—that the cow was killed when in a dying state?—Yes.

Cross-examined—Do you mean that they had anticipated death by a few minutes?—A little after death it might have been struck.

Do you mean to say that the cow was killed or struck after death?—More likely than not.

That is your professional opinion?—That is my candid opinion. The flesh looked as if the animal had died.

May I take it as your professional opinion that the animal died from disease and was not bled?—Yes.

Further cross-examined, Mr. Crowhurst said his opinion that the flesh was not fit for food was based on its dark appearance and softness. The fact that blood was not oozing from the meat did not show that the animal had been properly bled. He had had great experience in the disease of Parturient Apoplexy, which was very common after parturition. In the latter stages of the disease, that was just before death, he believed there was poison in the blood. In the early stages the blood was in no way affected, but after two or three days' sickness, in his opinion, it was.

May I take it that you agree that in the earlier stages of Parturient Apoplexy, if the animal is killed the flesh is perfectly good?—If the animal is killed at that time I believe the flesh is fit for food.

The Chairman—You decided that in this case the flesh was unfit for food?—Yes, sir.

Mr. Dickens—By the darkness?—Witness—And the condition of the meat.

Cross-examination continued—Supposing a cow was seized with Parturient Apoplexy in the afternoon of one day and killed in the morning of the next; would that be killing in the earlier stages, in your opinion?—Not so early as it ought to be killed.

Re-examined.—Whether the cow was pole-axed a few minutes before or after death did not affect his opinion that the flesh was unfit for food.

This was the case for the prosecution.

Mr. Dickens then addressed the Bench for the defence. He submitted that there was no case in law, and said he should answer it in fact. He ventured to think that the case required very serious consideration, as it was of the utmost importance to butchers and everybody connected with trade; first of all, if a man acting perfectly *bona fide*, as he thought it was clear from the case of the prosecution Mr. Ray did, without any guilty knowledge in his mind, was to be liable to penalty; and, secondly, if butchers were to incur a penalty for doing that which in the opinion of all experts was a perfectly safe thing to do, and which, in the opinion of Mr. Crowhurst, was also a perfectly safe thing to do. He submitted that, according to the ordinary principles of law, justice, and common-sense, in order to convict a man of an offence there must be shown a guilty mind on the part of the offender. It must be shown in this case, before the Bench could convict, that defendant was offering the meat in question to the public with the full knowledge that it was unfit for human food, and if he, *bona fide*, believed that the flesh was fit for food, as defendant undoubtedly did believe, no conviction could take place. There were many cases which carried out this principle of law. Mr. Dickens proceeded to quote from cases decided in the superior courts, including one in which a baker was charged with selling bread adulterated with alum. In this case, he pointed out, it was held that the mere fact that alum was used was not sufficient; it must be proved that the man charged

used it with a guilty knowledge—namely, full knowledge that he was infringing the law. As to the question of fact, Mr. Dickens said he had a complete answer to the case. After commenting on the fact that the defendant was not allowed to have a sample of the meat in question submitted to an analyst on his own behalf, the learned counsel proceeded to deal with the evidence he should call, asserting that he should thereby prove that at the time the cow was killed the flesh would be perfectly good and fit for human food.

John Shirley, cowkeeper, and landlord of the Anchor and Hope Inn, West Borough, stated that the cow in question was his property. It calved on Sunday, the 12th October, and all was right on Monday night. He first noticed there was something the matter with the animal on Tuesday morning, at about half-past six o'clock, and he immediately went for Mr. Catt, veterinary surgeon, who carefully examined the cow, and advised witness that if killed at once the flesh would be perfectly good. He employed Mr. Amies to sell the animal, and saw it killed at about noon. When pole-axed the cow was lying in the position which cows take up when chewing the cud. When witness first noticed there was something the matter with the cow it was up on its legs. Shirley added that he saw the carcase, which he considered about as good a one as he had ever seen.

Cross-examined—You said the cow was lying down when pole-axed; it could not stand, I suppose?—We did not try to get her up. I don't know whether it could stand or not.

I suppose you would not have had the cow killed if there had been a chance of its living?—I went by the Veterinary Surgeon's opinion.

What price did you get for the cow?—I got £6 for it, and was to have had more if Mr. Ray sold it. [Sensation in court.]

Then there was some doubt in Mr. Ray's mind as to whether he would be able to sell it?—That was the arrangement with Mr. Ray when Mr. Aimes sold it.

Did you tell Mr. Jackling that the cow died of Milk-fever?—No; I believe Mr. Jackling got his information from my wife. I never mentioned anything about Milk-fever to her.

The Chairman—What was the value of the cow?

Witness—On Monday night it was worth £25 to me.

The Chairman—And you sold it for £6?

Witness—Yes.

Mr. Dickens—You mean that the cow was worth £25 to you when in milk?

Witness—Yes.

John Amies, cattle dealer, deposed that he was employed by the previous witness to sell the cow in question. Before selling it he saw Mr. Catt, and in consequence of what he was told by him he disposed of the cow to Mr. Ray for £6. Mr. Catt said the flesh would be quite fit for food.

The Chairman—What did you consider the value of the animal as a milch cow?

Witness—It would be worth £25.

The Chairman—You would not sell it for £6?

Witness—Well, sir, this was not sold for £6. If Mr. Ray could afford to give Shirley more money after disposing of the cow he was to do so.

Examination continued by Mr. Dickens—You would not mind eating the flesh of the cow yourself, I suppose?—I would rather not myself. (Laughter.)

Mr. A. E. Catt, M.R.C.V.S., stated that he saw the cow in question on Tuesday morning, the 14th October, at about nine o'clock. He found the animal in the early stages of Parturient Apoplexy, and advised Shirley that if the animal was then killed its flesh would be perfectly good for food.

In your experience is the flesh of an animal suffering from Parturient

Apoplexy fit for human food?—Yes, if the animal is killed in the early stages of the disease.

Did Mr. Ray ask you for your opinion?—Yes; and I told him the flesh would be good.

Continuing, witness said he saw the flesh of the cow after it had been cut up, but failed to notice that it was particularly dark. The colour was in no way abnormal, and there was no flabbiness about the meat. Darkness would increase with hanging.

Cross-examined—If an animal had died from Parturient Apoplexy he should expect the flesh to be dark in colour. The disease was very rapid in its course, and an hour or two sometimes made a great deal of difference.

Would you mind eating the flesh of a cow which had suffered from Parturient Apoplexy?—I should not mind at all, because probably I should not know it.

If the flesh of the cow in question had been very dark, would that indicate that it was unfit for food?—Yes, it would.

Professor William Pritchard, a Past President of the Royal College of Veterinary Surgeons, was next called by Mr. Dickens. The Professor stated that in Parturient Apoplexy there was no blood poisoning, and if an animal affected with the disease was killed in time the flesh was quite fit for human food.

You have probably heard in this case that the symptoms first appeared at about seven o'clock, and the cow was killed at about twelve on the same day; do you think, considering the time which had elapsed, the flesh would be fit for human food?—Yes, certainly.

Witness added that the symptoms described by Mr. Catt indicated Parturient Apoplexy.

Cross-examined—He had great experience in cases of Parturient Apoplexy, which he thought any intelligent cowman would be able to recognise. If an animal were allowed to live a long time after being attacked, the flesh would present a dark appearance, and it would then be unwholesome. If a cow, suffering from Parturient Apoplexy, was killed, and the flesh presented a very dark appearance, it would not be fit for food.

Mr. J. B. Martin, Veterinary Surgeon, of Rochester, gave evidence of a corroborative nature.

Cross-examined—Parturient Apoplexy was occasionally a rapid disease. If a cow had suffered during the whole of a night and for four hours on the following day before being killed, that would make a good deal of difference; but it would depend upon the rapidity with which the disease ran its course.

Do you agree that if the disease had gone on so long that the flesh was, after the animal had been killed, very dark in colour, it would then be not fit for human food?—Yes; if there was any decomposition going on; not from darkness of colour only. If there was any decomposition or flabbiness I should say the flesh was quite unfit for food.

Richard Grayland, a slaughterman, proved pole-axing the cow in question. There was nothing in the colour of the flesh when cut up to indicate the presence of disease.

This concluded the case for the defence.

Mr. D'Eyncourt was about to ask permission to say a few words on the legal point raised by Mr. Dickens, when

The Chairman said that was quite unnecessary. The point they had got to consider was whether or not this carcase, at the time it was exposed or deposited for the purposes of sale, was fit for human food. There was no doubt it was not, and after the evidence they had heard it was impossible to come to any other decision. It was for the defendant to show that the meat was not deposited or exposed for sale purposes, and as he had not done that

the Bench had no alternative but to convict, and the fine was £10 and £1 costs, with the alternative of one month.

Mr. Dickens—I presume you will allow defendant some time in which to pay the fine, as the probability is that we shall appeal?

It was understood that fourteen days would be allowed.

In an annotation on this case the Editor of the *South-Eastern Gazette* makes the following observation :—

"*Experto crede.* Precisely; but which expert? At the London Sessions last week we had an array of veterinary talent on either side on the question as to whether it was or was not cruelty to work a horse which had suffered from Chronic Laminitis? Two days before there was a case in Maidstone in which there was a similar division of expert opinion as to whether an animal which was killed when suffering from Milk Fever was or was not fit for human food? One is inclined rather to agree with the decision of the Bench, which was adverse to the defendant. There are possibly many things which may be eaten without positive or traceable injury, but which we should not eat from choice if we knew the facts. The concealment of these facts from the purchaser destroys sympathy with the vendor."

Notes and News.

ADMINISTERING DRUGS TO HORSES.—At the Spalding Petty Sessions recently, William Garner, farm servant, pleaded guilty to administering a poisonous drug to three cart horses belonging to his master, Mr. T. Barker, farmer. The horses were suffering from low fever, and after a search a bottle of oil of vitriol was found secreted in the stable. Defendant admitted giving the drug to the horses twice to improve their appetites, and said his master neglected to procure some powders for that purpose as he had promised. It was said that the drug gave horses more spirit and a glossy skin. As the defendant bore a good character, the penalty was reduced to 20s. The Chairman said this vitriol was most injurious to horses.

PREVENTIVE INOCULATION.—Frank S. Billings, in the *Times and Register* for August 30th, 1890, gives an account of the theory and practice of protective inoculation and vaccination, together with some of his own results. He is a disbeliever in the efficacy of Pasteur's antirabic treatment. He claims to have proved by his experiments that (1) a mitigated or non-fatal degree of virulence can be found in natural outbreaks; (2) this or any other degree of virulence can be retained indefinitely by his method of artificial cultivation; (3) the micro-organisms can be "fed up and down in virulence" by changes in nutrition alone; (4) a direct proportional relation can be established between a certain dose of virus of known virulence in small animals, and a safe and preventive dose of the same virus in hogs. He appears to have obtained a variety of the swine-plague microbe which is non-virulent, but capable of creating immunity in pigs when injected even in single doses of 1 cubic centimetre. Of the method by which this result has been achieved the only explanation given is that the germ loses its virulence when cultivated in sterilised cattle urine.

SWINE FEVER.—Much concern has been felt in consequence of several serious outbreaks of Swine Fever occurring in the Spalding Division, and the police were instructed to inquire into the correctness of the certificates which accompanied certain pigs that have died of Swine Fever. The result has been the discovery that these certificates were fictitious. Before such animals can be brought from Norfolk and Cambridgeshire (infected counties), a certificate has to be signed by the vendor certifying that they have been in his possession twenty-eight days, and are free from disease. Such a document was stated

to have been given on the sale of a herd of pigs numbering over 100, many of which have died of fever. It now transpires that they were sold by a dealer who collected the pigs from various markets in Norfolk, and had not had them in his possession many days. Most likely a prosecution will follow.

BACTERIA IN MILK.—Some very interesting experiments on the subject of bacteria in milk have been carried out at the Storrs experimental station by Prof. Conn, from which it appears that extremes of both cold and heat are alike injurious to this minute life. Cold hinders their development, while they are killed when the boiling-point is reached. They multiply rapidly in milk and cream exposed to the air, causing milk to sour and curdle. When the vessels containing milk are not washed properly, they lurk about and multiply in the sides and joints of milk vessels in the minute portions of the milk left there. The facts brought out show the importance of keeping milk so far as possible free from them by the greatest cleanliness in the dairy, and of cooling the milk immediately after coming from the cow.

ALKALOIDS OF ARECA NUT.—Professor Marmé, in the *Therapeutische Monatshefte* for 1890 (p. 291), has investigated the physiological action of the alkaloids of areca nut. Areca nut (betel) is the seed of the areca catechu, and is used in India and China medicinally as an astringent, antiperiodic, and an anthelmintic. Fluckiger described the nut as containing 14 per cent. fat and 15 per cent. tannin. Bruchelow, later, described an alkaloid, arecan. E. Jahns has lately described other alkaloids, two of which are named arecolin and arecaïn. Arecolin, $C_8 H_{13} NO_2$, is a fluid oily base, forming definite salts with acids. The bromate is readily soluble in water, and tastes salty; it was used for the investigation. Twenty-five to 50 milligrammes ($\frac{3}{8}$ to $\frac{3}{4}$ grain) kill rabbits within five to fifteen minutes: 10 to 20 milligrammes ($\frac{1}{15}$ to $\frac{1}{3}$ grain) are fatal to cats, when subcutaneously injected. Dogs are killed by larger doses. The symptoms produced by arecolin resemble partly those caused by peltierine (the alkaloid from pomegranate), and partly those caused by muscarin or by pilocarpin. Arecolin is a local irritant when applied to mucous membranes, and when applied to the eye, it causes contraction of the pupil for an hour. When a large dose is applied to the eye of the rabbit, ptyalism and diarrhœa are produced, with a passing retardation of the heart's action. Medium doses introduced into the stomach cause vomiting and diarrhœa. This action of arecolin in producing evacuations is no doubt part of the effect of areca nut as an anthelmintic. Small doses subcutaneously injected in frogs slow the action of the heart, which stops finally in diastole, occasionally giving feeble beats. This effect resembles that of muscarin, and is, like that of the latter alkaloid, completely antagonised by small doses of atropine. Arecolin also affects respiration, causing dyspnœa, which appears to be due to excessive bronchial secretion. Like peltierine, it has a paralysing action on the brain, but not to so marked an extent. The reflex excitability of the spinal cord is at first increased, then diminished. Arecaïn, the second alkaloid isolated by Jahns, is not poisonous. Arecolin is excreted by the urine and the secretions of the gastro-intestinal tract. The action of arecolin possibly explains betel-chewing.

BLUE MILK.—Dr. P. Behr (*Centralblatt f. Bakt u. Parasitenk.*, Bd. viii., No. 16, October 8th, 1890) gives the results of a series of experiments on the bacillus of blue milk in which the power of colour production was lost. Observations have already been made in connection with the loss of the colour-producing power of the Bacillus prodigiosus and B. pyocyaneus, and he refers to Dr. Heim's observation on the same question in connection with the bacillus of blue milk. He made his experiments with three sets of blue milk bacillus, and, although there was nothing peculiar about the plate cultivations, he found that one of them produced no colour in sterilised milk, in

neutralised agar, and in neutralised gelatine, even in very old cultivations. That it was the specific bacillus was proved by the fact that at a later period, in other cultivations, the characteristic colour reaction was obtained. In all cases it still retained its morphological peculiarities, it was actively motile, and flagella could be well demonstrated. Dr. Behr suggests that this is another proof that bacilli may for a time lose their specific characteristics; and although we are as yet unable to determine the exact conditions under which these characteristics are lost, such isolated facts enable us to hope that in time we may be able to modify the conditions under which different organisms exist, and that we may at will cause specific micro-organisms to lose their colour, enzyme and toxine producing powers.

STARVATION AND LIABILITY TO INFECTIOUS DISEASE.—Canalis and Morpurgo in the *Oesterr-ungar. Centralbl. f. d. med. Wissenschaften*, for October, 1890, have recently made observations on this subject. Their experiments were made with the anthrax bacillus, the animals chosen being those most resistant to this disease, namely, pigeons, hens, and rats. Most observers have regarded pigeons as very sensitive to the anthrax poison. Canalis and Morpurgo find, on the contrary, that they show great resistance, for, out of 12 pigeons inoculated with Anthrax only two died, one on the fourth and the other on the seventh day after inoculation. They sum up their results as follows: (1) Animals previously immune can be rendered sensitive to infectious disease by withholding food for a period. (2) In the case of pigeons, immunity against Anthrax is completely lost if from the time of inoculation all food is withheld. (3) On the other hand, pigeons starved for six days before inoculation can be rendered immune against Anthrax if again fed subsequent to inoculation. (4) This is not the case if subsequent to inoculation they are starved for a further period of two days before they are again fed. The disease in this case, however, runs a longer course. (5) Well-nourished pigeons inoculated with anthrax virus take the disease, if even eight days later food is entirely withheld. (6) This would seem to indicate that the anthrax bacillus is capable of maintaining its vitality for at least several days after subcutaneous injection, and then producing this disease. (7) This increased sensitiveness towards Anthrax, as the result of starvation, cannot be ascribed to the fall in the temperature which ensues, since a similar fall of temperature artificially produced in well-nourished pigeons does not deprive them of the immunity they previously possessed. (8) Hens also can, to a certain extent, be rendered sensitive to Anthrax by starvation. (9) The great majority of them succumb to the disease if previously to inoculation they have been starved from three to seven days. (10) Rats—at least, the white variety used by Canalis and Morpurgo—retained their immunity against the disease, even if starved for a long period.

STRYCHNINE AS AN ANTI-TETANIC REMEDY.—Dr. Peyraud, in the *Bull. de l'Acad. de Medecine*, for October, gives an account of some experiments carried out with soil taken from a covered-in enclosure in which wine was stored, and in which no horses had entered within the memory of the inhabitants, and which had not in any way been cultivated since the store was erected. Dust from forage when inoculated induces Tetanus in 50 per cent. of the animals experimented on, but soil taken from this wine store induced Tetanus in 100 per cent., five out of every six of the animals inoculated dying. Having obtained this virulent material. Dr. Peyraud carried out a series of experiments to test his theory that strychnine, which produces many of the symptoms of Tetanus, would probably act as a vaccine; he, therefore, injected 0.5 milligramme of strychnine in solution every day for five days. Ten rabbits so vaccinated and four test rabbits were inoculated with a small portion of tissue from near the wound in an animal in which Tetanus had

been produced experimentally, and the wounds were carefully closed. Of the fourteen animals the four test rabbits and three of those vaccinated died. In a second series of experiments, seven prepared rabbits and fourteen test rabbits were inoculated with tetanic virus six days after the strychnine inoculation had been stopped; thirteen of the test animals and four of the prepared animals died. MM. Verneuil, Trasbot, and Nocard were appointed as a committee to test the accuracy of such an important statement, but unfortunately they were unable to obtain as good results as Dr. Peyrand had recorded. They found that the soil was undoubtedly capable of producing Tetanus in a certain proportion of rabbits, but in their hands this proportion was only 11 per cent., whilst as regards preventive inoculation, 0.6 of a milligramme of sulphate of strychnine injected daily for five days did not protect a single one of eight rabbits against the action of a pure cultivation of the bacillus of Tetanus. They were killed as rapidly and with the same symptoms as eight test rabbits. All died in from three to five days. Thinking that the dose of strychnine might be too small, they gave to ten rabbits one milligramme of sulphate of strychnine; one of the animals died. The next day they injected 0.9 of a milligramme, and another of the animals died; the third day, 0.8 of a milligramme, and only two or three of the animals showed symptoms of strychnine poisoning. On the fourth and fifth days the same dose was administered to the remaining eight rabbits. On the sixth day, the eight prepared rabbits and four test rabbits received ten drops of a pure culture of the bacillus of Tetanus with the result that the whole twelve were dead at the end of five days, and the reporters conclude that although an important fact has been demonstrated by M. Peyraud as regards the presence of the Tetanus bacillus in non-cultivated and undisturbed soil, his experiments on preventive inoculation with strychnine against Tetanus are vitiated by some important fallacy, as the committee were unable to obtain the same results.

Royal Military Exhibition.—The certificate of merit for an Animal Cremator and a Horse-sling has been awarded to J. Mills, A.V.D.; also one to Dr. Fleming for improvements in Winter-Shoeing.

Cinchona in Rinderpest.—Experiments have lately been made in the Madras Presidency as to the effect of the solid cinchona febrifuge in the treatment of Rinderpest. Of twenty-two cattle experimented on, fifteen recovered, one was relieved, and only six died. The drug is said to reduce the temperature very considerably in the first stages, but in an advanced stage of the disease it is of little or no use.

Why Cats have Whiskers.—Everyone must have observed what are usually called the whiskers on a cat's upper lip. The use of these, in a state of nature, is very important. They are organs of touch. They are attached to a bed of close glands under the skin, and each of these long hairs is connected with the nerves of the lip. The slightest contact with these whiskers with any surrounding object is thus felt most distinctly by the animal, although the hairs of themselves are insensible. They stand out on each side of the lion, as well as in the common cat; so that, from point to point, they are equal to the width of the animal's body. If we imagine a lion stealing through a covert of wood in an imperfect light, we shall at once see the use of those long hairs. They indicate to him, through the nicest feeling, any obstacle which may present itself to the passage of his body; they prevent the rustling of boughs and leaves, which would give warning to his prey, if he was to attempt to pass through too close a bush; and thus, in conjunction with the soft cushions of his feet, and the fur upon which he treads (the claws never coming in contact with the ground), they enable him to move toward his victim with a stillness even greater than that of the snake, which creeps along the grass, and is not perceived until it is coiled around his prey.

TUBERCULOSIS IN DENMARK.—This disease has been the subject of a most exhaustive inquiry in Denmark. This inquiry, which was instigated by the Danish Government, was conducted by the celebrated Dr. Bang, and he was assisted in his investigations by the whole of the official veterinary staff of Denmark. In his report Dr. Bang concludes that the disease is very prevalent, especially on the large farms, where already five to six per cent. of the stock may be considered affected, and on peasant holdings, since the peasant proprietors generally obtain their calves from the large farms. He declares that the disease has spread considerably during the last decade, and attributes this increase to the enormous development of dairy farming. "The cow," says he, "is now transformed into a mere milking machine, and is debilitated by prococious and forced milking. It is further weakened by being kept in over-heated stalls, whereby the skin and hair become very fine, and render the animal susceptible to the changes of temperature when at pasture." "Tuberculosis," he remarks, "is developed either by contagion or is hereditary." In support of this statement he cites numerous cases where the disease has been transmitted by affected animals to healthy stock, and instances are given of transmission by fodder, water, walls licked by diseased animals, dung, urine, and also by the expectorations of phthisical herdsmen. In conclusion, he states that Tuberculosis is nearly always transmitted to offspring if both parents are affected with the disease, generally if the female is tuberculous, and frequently when the male only is diseased.

Correspondence.

ANEURISM IN HORSES AND HOUNDS.

DEAR SIR,—During a period of twelve years in a practice consisting almost exclusively of race-horses, hunters, and a few greyhounds, I have never met with a single case of Aneurism. If this information is likely to be of any service to Dr. Ballance please publish it. G. WILKINS, F.R.C.V.S.

Lambourn, Berks, *Nov. 16th.*

IS A NEW CHARTER REQUIRED?

SIR,—On page 215 (1st Nov., 1890) of the *Veterinary Record*, I see recorded a report of the Lincolnshire Veterinary Medical Association, in which several members discuss the question, "Is a New Charter Required?" From the observations made, it would appear that a new charter is very urgently required in order to put down quackery; it would appear that empiricism is rampant in some parts of Lincolnshire, and that this new charter is to put all this straight at once. *No man can conceive a greater delusion*, and if we are to take this as a sample of the enlightened opinion of provincial members throughout the land, any note on the subject will be entirely wide of the mark. In the first place, the proposed new charter has not the slightest intention, it has not the remotest pretence, to prevent men from docking horses, or in doing anything in the way of treating sick or lame domestic animals. So I hope and trust that every member of every V.M.A. will at once disabuse their minds of this erroneous idea. It must be remembered that a charter is an instrument granted by the Queen and her ministers, and the Queen and her ministers of themselves have no power whatever to inflict a fine of even half-a-crown, or imprisonment, on any of her subjects. It requires an Act of Parliament—that is, an instrument combining the authority of Queen, Lords, and Commons—to give a power or authority to a magistrate to inflict a fine or imprisonment as a punishment on anyone infringing the said Act.

Now this Act we have already, and it is put into motion in every case that is properly brought before the Council. It appears to me that the agitators for this new charter are so fond of change that they would make a change for the mere sake of change. *They are fomenters of discontent.* Why agitate for a change so long as the present system works so well, *and is so eminently satisfactory to the profession in general?*

They say the dual appointment must be abolished, but these men have not brought forward the slightest evidence or proof that the profession has suffered in the slightest degree through it. I am prepared to say emphatically it has been found of immense service and convenience to the Council. It is because these officers are valuable and useful men—men of unswerving constancy; men with special aptitude—that they have been elected to the dual office. They are faithful, devoted servants of the profession, and I say it will be a loss, it will be a sad day to the profession, if ever this narrow view be adopted.

As to the ninth clause, the object of it was to create an additional incentive to increased study, to cause the character of our profession to be more respected, and it was expected that every good man and true would aspire to take this higher degree. Every member of ordinary ability can become a Fellow if he likes. At the time this supplemental charter was granted, in 1876, *the profession was wide awake, and it is a reflection on the profession to say it was not.*

It was discussed over and over again by every veterinary medical association, at every committee and quarterly meeting of Council, and at the annual meeting of the profession, *and approved of at these meetings. The whole profession gave a tacit consent to it.* Therefore I say a new charter is unnecessary. My deep-rooted, and I believe well-founded conviction, is that the path of duty lies in a continuance of our present system.

THOS. GREAVES, F.R.C.V.S.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from E. A. V. Schweinitz, Washington, U.S.A.; J. Lee, Huntingdon; H. M. Singleton, Ealing; R. W. Burke, India; F. Somers, Leeds; G. Wilkins, Lambourn; P. G. Bond, Plymouth; T. Greaves, Manchester; W. Penhale, Bideford; J. Mills, A.V.D., Chatham; C. Rutherford, A.V.D. Aldershot; A. W. Hill, London; F. G. Samson, Mitcham; G. M. Rayment, A.V.D., Paris; R. Rutherford, Edinburgh; S. Villars, Harrow; G. A. Banham, Cambridge; J. Cooke, Scarboro'.

BOOKS AND PAMPHLETS: *William R. Ballou, M.D.*, A Compend of Equine Anatomy and Physiology; Agriculturist's Pocket Book and Diary for 1891; Veterinary Surgeon's Diary and Note Book for 1891; *S. Brusafero*, La Tuberculosi negli animali Domestici; Encyklopadie der Gesammten Thierheilkunde und Thierzucht; Proces Verbal de l'Academie Royale de Medecine de Belgique; *Drs. Boschetti e Bassi*, Giorgio Fleming Trattato di Ostetricia Veterinaria; *Dr. J. Bayer*, Bildliche Darstellung des Gesunden und Kranken Auges unserer Hausthiere.

NEWSPAPERS: *Yorkshire Post; Leeds Mercury; Somerset County Gazette; Baltimore American; Devon and Exeter Daily Gazette; Eastern Counties Gazette.*

JOURNALS, ETC.: *Newsman; Journal of Comparative Medicine and Veterinary Archives; Journal of the Royal Agricultural Society of Victoria; Lancet; Live Stock Journal; Annales de Médecine Vétérinaire; Recueil de Medecine Vétérinaire; Echo Vétérinaire; Revue Vétérinaire; Hufschmied; Thierarzt; Clinica Veterinaria; Moderno Zooiatro; Wochenschrift für Thierheilkunde und Viehzucht; Petit Journal; Russian Veterinary Archives; Zeitschrift fur Fleisch und Milch-hygiene; British Medical Journal; Edinburgh Medical Journal.*